A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME VI - WING AND EMPENNAGE MODULE. APPENDIX F: PROGRAM LISTINGS, OVERLAYS (9,0), (10,0) AND (18,0)

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

Three computer programs were written with the objective of predicting the structural weight of aircraft through analytical methods. The first program, the structural weight estimation program (SWEEP), is a completely integrated program including routines for airloads, loads spectra, skin temperatures, material properties, flutter stiffness requirements, fatigue life, structural sizing, and for weight estimation of each of the major

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20. ABSTRACT (CONTINUED)

aircraft structural components. The program produces first-order weight estimates and indicates trends when parameters are varied. Fighters, bombers, and cargo aircraft can be analyzed by the program. The program operates within 100,000 octal units on the Control Data Corporation 6600 computer. Two stand-alone programs operating within 100,000 octal units were also developed to provide optional data sources for SWEEP. These include (1) the flexible airloads program to assess the effects of flexibility on lifting surface airloads, and (2) the flutter optimization program to optimize the stiffness distribution required for lifting surface flutter prevention.

The final report is composed of 11 volumes. This volume (volume VI) contains the methods and program description for the wing and empennage module of SWEEP. Program listings and flow charts are included in the appendix to this volume.

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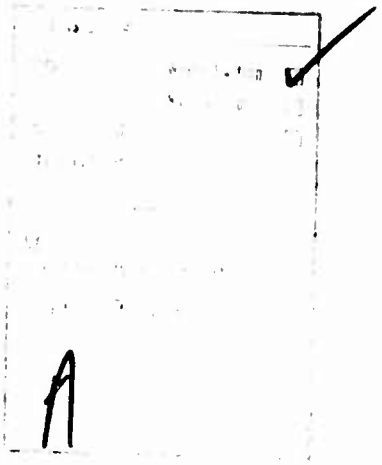

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Publication of this technical report does not constitute Air Force approval of the report's findings or conclusions. It is published only for the exchange and stimulation of ideas.

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Deputy for Development Planning

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PROGRAM LISTINGS, OVERLAYS (9,0), (10,0) AND (18,0)

TABLE F-1. APPENDIX REFERENCES FOR OVERLAY (9,0) ROUTINES

Routine	Appendix Reference Pages	
	Program Flow Charts	Program Listings
ØLAY9	1622	2424
CSECW	1680	2453
DEADW	1638	2432
DLPVT	1684	2455
DWYBA	1633	2429
PIVOT	1660	2443
PROG	1625	2424
PRTA	1693	2461
PRTH	1703	2466
TBØPT	1646	2436
TEE	1672	2450
TEL	1676	2452
VLØAD	1642	2434

TABLE F-2. APPENDIX REFERENCES FOR OVERLAY (10,0) ROUTINES

Routine	Appendix Reference Pages	
	Program Flow Charts	Program Listings
ØLAY10	1734	2470
BHDJT	1878	2537
BØT	1780	2494
BØTC	1791	2497
CG3P	1894	2544
CNSTR	1737	2470
EIGJC	1860	2524
PRTB	1902	2546
PRTBK	1911	2550
PRTC	1907	2548
RTRIB	1887	2541
SECTD	1748	2477
SFSCH	1761	2485
SKWEB	1857	2523
SRRIB	1848	2520
SS	1899	2545
STBAR	1811	2507
STRG	1817	2509
STRGØ	1833	2514
STRIB	1842	2518
STRIL	1837	2516
STWEB	1851	2521
TSCH	1795	2498
VFCAL	1865	2528
WTCAL	1871	2531
WTPIN	1890	2542

TABLE F-3. APPENDIX REFERENCES FOR OVERLAY (18,0) ROUTINES

Routine	Appendix Reference Pages	
	Program Flow Charts	Program Listings
ØLAY18	1970	2554
ACEIGJ	2096	2629
ACLØAD	1982	2561
ACMRSK	2074	2615
ACNSTR	2100	2632
ACPRØG	2000	2572
ACPRTA	2111	2642
ACSTRG	2079	2619
ACWFDH	2027	2590
ACWMS	2012	2580
ACWRBS	2044	2598
ACWSTR	2057	2606
ASTIFF	2090	2624
ATBØPT	1973	2554
AVLØAD	1996	2569
BHDJT	2128/1734	2650/2470
CKSFDH	2034	2594
CKSTAB	2006	2577
CSECW	2138/1680	2651/2453
DEADW	2136/1638	2651/2432
DLPVT	2146/1684	2652/2455
DWYBA	2134/1633	2651/2429
PIVØT	2140/1660	2651/2443
PRTB	2148/1902	2652/2546
PRTC	2150/1907	2652/2548
PRTH	2152/1703	2653/2466
RTRIB	2130/1887	2651/2541
TEE	2142/1672	2652/2450
TEL	2144/1676	2652/2452
TEMPC	1990	2566
WEIGH1	2038	2595
WEIGH2	2086	2622
WTCAL	2126/1871	2650/2531
WTPIN	2132/1890	2651/2542
XN	2123	2650

OVERLAY (9,0)

TORQUE-BOX STRUCTURAL SYNTHESIS/WEIGHT ANALYSIS
FOR METALLIC DESIGNS - No. 1

FORTRAN MODULE (LIST,AUTOSEQ)

CARD NO **** CONTENTS ****

```
C***********************************************************************
C
C         *****PROGRAM OLAY9*****
C    ***PROGRAM FOR SIXTH OVERLAY OF WING/EMPENNAGE MODULE***
C         STRUCTURAL SYNTHESIS/WEIGHT ANALYSIS - METALLIC DESIGN NO 1
C
C***********************************************************************
C
      PROGRAM OLAY9
C
      COMMON T(7120)
C
      COMMON /MISC/ XMISC(100)
C
      REWIND 24
C
      BUFFER IN(24,1)(T(1),T(7210))
C
      IF(UNIT(24))10,10,10
C
   10 CALL PROG
C
      REWIND 24
C
      BUFFER OUT(24,1)(T(1),T(7120))
C
      IF(UNIT(24))20,20,20
C
   20 CONTINUE
C
      END
C****************************************  *************************
C
C         *****SUBROUTINE PROG*****
C    ***SYNTHESIS CONTROL PROGRAM - GW AND DEADWEIGHT ITERATION***
C
C***********************************************************************
C
      SUBROUTINE PROG                                                   PROG0010
C                                                                       PROG0020
C             **GENL CONTROL PROG FOR GW/DW PASSES***                   PROG0030
C                                                                       PROG0040
C                                                                       PROG0110
C                                                                       PROG0130
      COMMON T(2060),D(2060),CD(2000),ND(100)                           PROG0140
      COMMON /MISC/XMISC(100)                                           PROG0141
C                                                                       PROG0150
      DIMENSION DC(100),TSCC(300),DGW(3),TOGW(3),TSS(100),TWT(400),     PROG0160
     1TT(24),DMTLB(17),TOGW(15),ULTPM(11),DWV(11),DW  (1),DWT(11),      PROG0161
     2YBUI(11),YBUD(11),YBLI(11),YBLD(11),                              PROG0162
     3DWMI1(11),DBMI1(11),DNXI1(11) DCFFI(11),                          PROG0163
     4SDWV(11),SDWM(11),SDWT(11),DCDL1(8),DCNST3(22),TCNST(8),          PROG0164
     5RFDGW(8),FLV1(11),FLV2(11),FLM1(11),FLM2(11),FLT1(11),FLT2(11),   PROG0165
     6COLV1(11),COLV2(11),COLV3(11),COLM1(11),COLM2(11),COLM3(11),      PROG0166
     7COLT1(11),COLT2(11),COLT3(11),STMV(11),STMM(11),STMT(11),         PROG0167
     8DCBST(11),DCNOS(11),DPCOL(10),SWT(11),                            PROG0168
     9WPNLS(11),TPNLW(11),TBCHT(11),TOWP1(11),TMWP1(11),VFWP1(11)       PROG0169
     A,ACVFDE(11),ACVFDO(11)                                            PROG0169
     B,CTBW(150),TSC(420)                                               PROG0168
C                                                                       PROG0170
      EQUIVALENCE (DC(1),D(1401)),(TSCC(1),CD(1501)),(TT(1),T(1317)),   PROG0180
     1(DGW(1),D(102)),(DGWO,D(105)),(DGWI,T(22)),(TOGW(1),D(80)),       PROG0181
     2(DKVL,D(234)),(DWND,D(369)),(DCNST3(1),D(1301)),(TWT(1),CD(1101)),PROG0182
     3(TDGW(1),T(430)),(DGWR1,TOGW(1)),(DGWR,TOGW(2)),(TBXX,TOGW(4)),   PROG0183
     4(RFL1,TOGW(11)),(RFL2,TOGW(12)),                                  PROG0184
     5(COLK1,TOGW(13)),(COLK2,TOGW(14)),(COLK3,TOGW(15)),               PROG0185
     6(IOPG,ND(83)),(IOPC,ND(84)),(IOP1,ND(82)),(IOPI,ND(74)),          PROG0186
     7(ISC,ND(22)),(ICD,ND(48)),(I,ND(28)),(N,ND(27)),(K,ND(29)),       PROG0187
     8(IF4,ND(93)),(IF8,ND(87)),(NOCT,ND(58)),                          PROG0188
     9(IOW,ND(81)),(IOT,ND(57)),(NDOW,ND(56)),(NOWP,ND(25))             PROG0189
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```
CARD NO  ****                          CONTENTS                          ****
   71    C                                                                PROG0190
   72    C                                                                PROG0200
   73    C                                                                PROG0210
   74          EQUIVALENCE (YBUD(1),T(679)),(YBLD(1),T(690)),             PROG0220
   75         1(DOPT,D(1385)),(DOPTP,D(1393)),(TSS(1),T(1961)),           PROG0221
   76         2(DCBST(1),D(765)),(DCNOS(1),D(778)),                       PROG0222
   77         3(DWV(1),T(593)),(DWH(1),T(609)),(DWT(1),T(620)),           PROG0223
   78         4(DWH1(1),T(701)),(DBH1(1),T(712)),                         PROG0224
   79         5(DNX1(1),T(723)),(DEFF(1),T(800)),(ULTPM(1),TSEC(1)),      PROG0225
   80         6(FLV1(1),T(445)),(FLH1(1),T(456)),(FLT1(1),T(467)),        PROG0226
   81         7(FLV2(1),T(478)),(FLH2(1),T(490)),(FLT2(1),T(419)),        PROG0227
   82         8(SDWV(1),T(894)),(SDWH(1),T(895)),(SDWT(1),T(806)),        PROG0228
   83         9(YBU(1),TSEC(133)),(YBL(1),TSEC(188))                      PROG0229
   84    C                                                                PROG0230
   85          EQUIVALENCE (STHV(1),T(8)),(STHH(1),T(822)),(STHT(1),T(833)), PROG0240
   86         1(CDLV1(1),T(309)),(CDLH1(1),T(320)),(CDLT1(1),T(331)),     PROG0241
   87         2(CDLV2(1),T(342)),(CDLH2(1),T(353)),(CDLT2(1),T(364)),     PROG0242
   88         3(CDLV3(1),T(375)),(CDLH3(1),T(386)),(CDLT3(1),T(397)),     PROG0243
   89         4(SDRHO,TWT(175)),(RFDGW(1),T(522)),(DMTLB(1),T(201)),      PROG0244
   90         5(SDRHO,TWT(175)),(ERT,DMTLB(14)),(GRT,DMTLB(15)),          PROG0245
   91         6(DPCDL(1),T(220)),(SWT(1),T(734)),(TCNST(1),CD(1960)),     PROG0246
   92         7(WPNLS(1),T(695)),(TPNLW(1),T(658)),(TBCWT(1),T(789)),     PROG0247
   93         8(TBWP(1),T(745)),(TWPP(1),T(778)),(VFWP(1),T(756)),        PROG0248
   94         9(DCDL(1),D(187))                                           PROG0249
   95         A,(ACWFDE(1),CD(1938)),(ACWFDO(1),CD(1949))                 PROG0249
   96         B,(DRHOO,CD(1937)),(DGWF,CD(1936)),(DEWF,CD(1935))          PROG0251
   97         C,(CTBW(1),T(1541)),(TSC(1),T(1541))                        PROG0252
   98    C                                                                PROG0260
   99    C                                                                PROG0270
  100    C            ***CHECK XMISC(39) FOR STATUS--OLAY 17 OR OLAY 10***  PROG0280
  101    C              *0= FIRST CALL OF PROG*                           PROG0290
  102    C              *1-6=RETURN ID FROM TBOPT FOR CALL TO CNSTR-OLAY 10*  PROG0300
  103    C              *7=NORMAL RETURN FROM TBOPT*                      PROG0301
  104    C                                                                PROG0302
  105         IF (XMISC(39)) 100,100,240                                  PROG0310
  106    C                                                                PROG0320
  107    C            ***SETUP ON PASSES. MAX=5***                        PROG0330
  108     100  NOMP = IFIX(ONNO)                                          PROG0340
  109          IF (ND(5) - NOMP) 101,102,102                               PROG0350
  110     101  NOMP = ND(5)                                               PROG0360
  111    C                                                                PROG0370
  112    C                                                                PROG0440
  113    C             **SETUP OPT SEARCH ID AND TEST.**                  PROG0450
  114     102  IOPI = DOPT                                                PROG0460
  115          IF (ND(2) - IOPI) 103,103,1030                              PROG0470
  116    C               OPT SEARCH. SAVE DATA                            PROG0480
  117     103  IOPS = ISC                                                 PROG0490
  118          IOPC = ICD                                                  PROG0491
  119    C                                                                PROG0492
  120    C            ***SET RCDS 110-142, 144-149 TO 0 FOR TBOPT SEARCH***  PROG0493
  121    C             **USE CD(1-400)=0.0**                              PROG0494
  122    C              *RCD SIZE--150/RCD=110-119, 123-124, 128-129,      PROG0495
  123    C                                  133-134, 138-139*              PROG0496
  124    C                         100/RCD=120, 125, 130, 135, 140*        PROG0497
  125    C                         340/RCD=121, 126, 131, 136, 141*        PROG0498
  126    C                         400/RCD=127, 132, 137, 142*    *        PROG0499
  127     1030 DO 104 N=110,138,5                                         PROG0500
  128          IFN = N                                                     PROG0501
  129          CALL WRITMS (1,CD(1),150,IFN)                               PROG0502
  130          IFN = N + ND(1)                                             PROG0503
  131          CALL WRITMS (1,CD(1),150,IFN)                               PROG0504
  132          IFN = N + ND(2)                                             PROG0505
  133          CALL WRITMS (1,CD(1),100,IFN)                               PROG0506
  134          IFN = N + ND(3)                                             PROG0507
  135          CALL WRITMS (1,CD(1),340,IFN)                               PROG0508
  136          IFN = N + ND(4)                                             PROG0509
  137          CALL WRITMS (1,CD(1),400,IFN)                               PROG0510
  138     104  CONTINUE                                                    PROG0511
  139    C                                                                PROG0512
  140    C              *CLEAR 104-109, 100/RCD*                          PROG0513
  141          DO 105 N=1,6                                                PROG0514
```

CARD NO	**** CONTENTS ****	
142	IF4 = N + 183	PROG0515
143	CALL WRITMS (1,CD(1),100,IF4)	PROG0516
144	105 CONTINUE	PROG0517
145	C	PROG0518
146	C ***SAVE D(375,376,377,378,380,381,382)***	PROG0519
147	150 DO 151 I=1,4	PROG0520
148	TCNST(I) = D(I+374)	PROG0530
149	TCNST(I+4) = D(I+379)	PROG0540
150	151 CONTINUE	PROG0550
151	C	PROG0570
152	C	PROG0580
153	C *****SETUP FOR 3 GW. CALC. GW 3 TO 1 TO 2.*****	PROG0860
154	200 IGW = ND(3)	PROG0870
155	NODM = NDMP + ND(1)	PROG0880
156	IF (TOGW(3)) 2000,2000,2003	PROG0881
157	C	PROG0882
158	C ***TOGW(3)=0. TEST TOGW(1)***	PROG0883
159	2000 IF (TOGW(1)) 2001,2001,2002	PROG0885
160	C	PROG0888
161	C ***TOGW(3 AND 1)=0. TEST TOGW(2)***	PROG0889
162	2001 IGW = ND(2)	PROG0890
163	IF (TOGW(2)) 400,400,2003	PROG0895
164	2002 IGW = ND(1)	PROG0900
165	C	PROG0904
166	C ***FIRST TOGW. TEST FOR TYPE OF SEARCH.***	PROG0905
167	2003 IF (IOPT - ND(1)) 210,210,420	PROG0906
168	C	PROG0909
169	C ***TOGW(3) NOT ZERO. DO TOGW(1)***	PROG0910
170	201 IGW = ND(1)	PROG0920
171	IF (TOGW(1)) 202,202,203	PROG0930
172	C	PROG0940
173	C ***TOGW(3 OR 1) NOT ZERO. DO TOGW(2)***	PROG0950
174	202 IGW = ND(2)	PROG0960
175	IF (TOGW(2)) 400,400,203	PROG0970
176	203 IF (IOPT - ND(1)) 2030,2030,410	PROG0980
177	2030 NODM = NDMP	PROG0985
178	C	PROG0990
179	C ***BEGIN LOOP FOR DGW***	PROG1000
180	210 DGWI = DGW(IGW)	PROG1010
181	C	PROG1018
182	C ***SET XMISC(39)=0.0 FOR FIRST CALL TO TBOPT FOR GW(1)***	PROG1019
183	XMISC(39) = DC(3)	PROG1020
184	C	PROG1029
185	IGT = IGW	PROG1030
186	DGWR = DGWI/DGWO*DKVL	PROG1040
187	DGWRI = DGWR - D(1)	PROG1050
188	C	PROG1060
189	C **SETUP TOTAL DW LESS BOX AT DGW(1)**	PROG1070
190	211 RFL1 = RFDGW(IGW+1)	PROG1080
191	RFL2 = RFDGW(IGW+5)	PROG1090
192	COLK3 = D(1)	PROG1100
193	COLK1 = D(1) - DCOL1(IGW+1)	PROG1110
194	COLK2 = D(1) - DCOL1(IGW+5)	PROG1120
195	DO 2110 I=1,11	PROG1130
196	SDWV(I) = STWV(I) + RFL1*FLV1(I) + RFL2*FLV2(I) + COLK1*COLV1(I) +PROG1140
197	1 COLK2*COLV2(I) + COLK3*COLV3(I)	PROG1141
198	SDWM(I) = STWM(I) + RFL1*FLM1(I) + RFL2*FLM2(I) + COLK1*COLM1(I) +PROG1150
199	1 COLK2*COLM2(I) + COLK3*COLM3(I)	PROG1151
200	SDWT(I) = STWT(I) + RFL1*FLT1(I) + RFL2*FLT2(I) + COLK1*COLT1(I) +PROG1160
201	1 COLK2*COLT2(I) + COLK3*COLT3(I)	PROG1161
202	2110 CONTINUE	PROG1170
203	C	PROG1178
204	C ***DW ITERATION LOOP. ADJUST DW AND YIBAR)****	PROG1179
205	220 CALL DWYBA	PROG1180
206	C **** TEST FOR CONST. BY GW ***	PROG1190
207	222 IF (DCNST3(1)) 230,230,223	PROG1200
208	223 D(375) = DCNST3(IGW+1)	PROG1210
209	D(376) = DCNST3(IGW+4)	PROG1220
210	D(377) = DCNST3(IGW+7)	PROG1230
211	D(378) = DCNST3(IGW+10)	PROG1240
212	D(380) = DCNST3(IGW+13)	PROG1250

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CARD NO  ****                          CONTENTS                          ****
  213          D(381) = DCNST3(IGM+18)                                   PROG1260
  214          D(382) = DCNST3(IGM+19)                                   PROG1270
  215     C                                                              PROG1280
  216     C                                                              PROG1350
  217     C            ***NET LOADS AND DESIGN DATA***                   PROG1360
  218      230 CALL VLOAD                                                PROG1370
  219     C                                                              PROG1380
  220          XMISC(39) = DC(3)                                         PROG1390
  221     C                                                              PROG1400
  222     C                                                              PROG1460
  223     C          *****START DESIGN/SYNTHESIS*****                    PROG1470
  224      240 CALL TBOPT                                                PROG1480
  225     C                                                              PROG1490
  226     C            ***TEST IF NORMAL RETURN--XMISC(39)=7.0***        PROG1500
  227          IF (XMISC(39) - D(7)) 241,250,250                         PROG1510
  228      241 RETURN                                                    PROG1520
  229     C                                                              PROG1529
  230     C            ***SAVE ASSUMED M(ULT) AND DWN DATA FOR ITERATION***  PROG1530
  231     C              *ORDER ROOT-TIP*                                PROG1540
  232      250 DO 251 I=1,11                                             PROG1550
  233          N = ND(12) - I                                            PROG1560
  234          DWMI(I) = DWM(I)                                          PROG1570
  235          DMII(I) = ULTPM(N)                                        PROG1580
  236      251 CONTINUE                                                  PROG1590
  237     C                                                              PROG1600
  238     C            ***DW(V,M) FOR %SIGNED DATA***                    PROG1610
  239     C            ***SET K=1 FOR DEADWEIGHT PRINT BY SUBR DEADW***  PROG1611
  240      260 K = ND(1)                                                 PROG1620
  241          CALL DEADW                                                PROG1625
  242     C                                                              PROG1628
  243     C            ****TEST FOR OPT SEARCH                           PROG1629
  244      261 IF (IOPT - ND(1)) 270,270,300                             PROG1630
  245     C                                                              PROG1639
  246     C            ****TEST FOR NEXT DW PASS****                     PROG1640
  247      270 NDDW = NDDW - ND(1)                                       PROG1650
  248          DOWRI = DC(2)                                             PROG1660
  249          IF (NDDW) 280,280,220                                     PROG1661
  250     C                                                              PROG1668
  251     C            ***SETUP DESIGN DATA FOR OUTPUT PROCESS***        PROG1669
  252      280 DWDD = SDWD                                               PROG1670
  253          DEWF = TWT(173)                                           PROG1671
  254          DGWF = TWT(174)                                           PROG1672
  255          DO 281 I=1,11                                             PROG1675
  256          ACWFDE(I) = DC(3)                                         PROG1676
  257          ACWFDG(I) = DC(3)                                         PROG1677
  258      281 CONTINUE                                                  PROG1678
  259     C                                                              PROG1679
  260     C                                                              PROG1682
  261     C            ***SAVE WT/DESIGN DATA FOR WDDATA/TBFWI SUBR.     PROG1683
  262     C              **CTBM ARRAY ITEMS STORED RT-TIP**              PROG1684
  263     C               *1.  11-Z(BOX WT/IN.-ST).  2. 11 BOX CHORDWISE ST. ITEMSPROG1685
  264     C               *3. 11 EI.  4. 11 GJ.  5. DESIGN E,G,RHO.       PROG1687
  265     C               *6.  10-BOX PNL WTS-ST.  7.  10-REQD BOX DIST. WTS.  PROG1688
  266     C               *8.  10-PNL DELTA COL FTG WTS.  9.  11-MISC WT/IN.  PROG1689
  267     C               *10. 11-WF WT/IN.                               PROG1690
  268     C               *11. TOTAL WT SUMMARY DATA--TWT(40-52) (SWT VARAY)*  PROG1691
  269     C                *12.  11-MATL E.  13.  11-MATL G*              PROG1692
  270     C              ***RCD 156,157,158--150 CELLS/RCD***             PROG1693
  271     C                *USE CTBM= TEMP SCRATCH LOC AT TSC(1-150)*     PROG1694
  272     C                                                              PROG1698
  273          DO 283 I=1,11                                             PROG1800
  274          CTBM(I) = TBMP1(I)                                        PROG1801
  275          CTBM(I+11) = TBCWT(I)                                     PROG1802
  276          CTBM(I+22) = CD(I+33)                                     PROG1803
  277          CTBM(I+33) = CD(I+22)                                     PROG1804
  278          CTBM(I+77) = TMAP1(I)                                     PROG1805
  279          CTBM(I+88) = WTMP1(I)                                     PROG1806
  280          CTBM(I+99) = SWT(I)                                       PROG1807
  281          CTBM(I+110) = ACWFDE(I)                                   PROG1808
  282          CTBM(I+121) = ACWFDG(I)                                   PROG1809
  283          IF (I - ND(10)) 282,282,283                               PROG1890
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CARD NO	**** CONTENTS ****	
284	282 CTBH(I+47) = NPNLS(I)	PROG1681
285	CTBH(I+57) = TPNLW(I)	PROG1682
286	CTBH(I+67) = DPCOL(I)	PROG1683
287	283 CONTINUE	PROG1684
288	CTBH(145) = DEVF	PROG1685
289	CTBH(146) = DGVF	PROG1686
290	CTBH(147) = DPHOO	PROG1687
291	C	PROG1688
292	IF8 = IGH + 155	PROG1689
293	CALL WRITMS (1,CTBH(1),150,IF8)	PROG1700
294	C	PROG1707
295	C ***TEST FOR NEXT OH***	PROG1708
296	C	PROG1709
297	IF (ND(2) - IGH) 201,400,202	PROG1710
298	C	PROG1719
299	C **OPT SEARCH. TEST LOOP ND=NOOH.**	PROG1720
300	C	PROG1729
301	300 IF (NOOH - ND(3)) 323,310,320	PROG1730
302	C ***3=OPT SEARCH COMPLETED. SET UP TO ITERATE AT OPT.***	PROG1740
303	C **DESIGN DATA ON RCD 1,2,3 OF BLOCK IOPT**	PROG1750
304	C *SETUP RECD DATA FOR ITERATION LOOP NOOH+2.	PROG1760
305	C	PROG1769
306	C **RCD NO 118,123,128,133 OR 138**	PROG1770
307	310 IF4 = IOPT*ND(5) + 1.3	PROG1775
308	CALL READMS (1,TSC(1),150,IF4)	PROG1780
309	D(375) = TSC(1)	PROG1790
310	D(378) = TSC(2)	PROG1800
311	D(380) = TSC(3)	PROG1810
312	D(381) = TSC(4)	PROG1820
313	D(382) = TSC(5)	PROG1830
314	DO 311 I=1,11	PROG1840
315	TBWP(I) = TSC(I+15)	PROG1850
316	TWWP(I) = TSC(I+26)	PROG1860
317	VFWP(I) = TSC(I+37)	PROG1870
318	NPNLS(I) = TSC(I+48)	PROG1880
319	TPNLW(I) = TSC(I+59)	PROG1890
320	TBCWT(I) = TSC(I+70)	PROG1900
321	DEFF(I) = TSC(I+81)	PROG1910
322	YBUD(I) = TSC(I+92)	PROG1920
323	YBLD(I) = TSC(I+103)	PROG1930
324	DCBST(I) = TSC(I+114)	PROG1940
325	DCNOS(I) = TSC(I+125)	PROG1950
326	DNX(I,I) = TSC(I+136)	PROG1960
327	311 CONTINUE	PROG1985
328	GO TO 323	PROG1970
329	C	PROG1980
330	C ***=BASIC OPT PASS COMPLETED. DO DISCRETE POINT SEARCH.*	PROG1990
331	C **SAVE DESIGN DATA FOR NEXT GA DESIGN**	PROG2000
332	C *RCD NO 143*	PROG2010
333	C *PROCESS DATA INTO TSC(1-200) FOR MOVE*	PROG2020
334	320 DO 321 I=1,11	PROG2030
335	TSC(I) = DCBST(I)	PROG2040
336	TSC(I+11) = DCNOS(I)	PROG2050
337	TSC(I+22) = DHMI(I)	PROG2060
338	TSC(I+33) = DBMI(I)	PROG2070
339	TSC(I+44) = DHV(I)	PROG2080
340	TSC(I+55) = DHM(I)	PROG2090
341	TSC(I+66) = YBUI(I)	PROG2100
342	TSC(I+77) = YBLI(I)	PROG2110
343	TSC(I+88) = DNX(I,I)	PROG2120
344	TSC(I+99) = TBWP(I)	PROG2130
345	TSC(I+110) = TWWP(I)	PROG2140
346	TSC(I+121) = VFWP(I)	PROG2150
347	TSC(I+132) = NPNLS(I)	PROG2160
348	TSC(I+143) = TPNLW(I)	PROG2170
349	TSC(I+154) = TBCWT(I)	PROG2180
350	TSC(I+165) = DEFF(I)	PROG2190
351	TSC(I+176) = YBUD(I)	PROG2200
352	TSC(I+187) = YBLD(I)	PROG2210
353	321 CONTINUE	PROG2220
354	C	PROG2230

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CARD NO  ****                          CONTENTS                          ****
     355        CALL MRITMS (1,TSC(1),200,143)                          PROG2240
     356   C                                                            PROG2250
     357   C                                                            PROG2260
     358   C          ****INCREMENT NODH AND TEST****                   PROG2270
     359    323  NODH = NODH - ND(1)                                     PROG2280
     360         DOWRI = DC(3)                                           PROG2290
     361         IF (NODH) 280,280,324                                   PROG2300
     362    324  CALL DMYBA                                              PROG2310
     363         GO TO 230                                               PROG2320
     364   C                                                            PROG2330
     365   C                                                            PROG2600
     366   C          ***DATA SETUP FOR NEXT CH FOR OPT SEARCH***       PROG2610
     367   C            *READ DATA FROM RCD 143 INTO TSC ARRAY AND PROCES** PROG2620
     368    410  CALL READMS (1,TSC(1),200,143)                          PROG2630
     369         DO 411 I=1,11                                           PROG2640
     370         DCBST(I) = TSC(I)                                       PROG2650
     371         DCNOS(I) = TSC(I+11)                                    PROG2660
     372         DWMI1(I) = TSC(I+22)                                    PROG2670
     373         DBMI1(I) = TSC(I+33)                                    PROG2680
     374         DWV(I) = TSC(I+44)                                      PROG2690
     375         DWH(I) = TSC(I+55)                                      PROG2700
     376         YBUI(I) = TSC(I+66)                                     PROG2710
     377         YBLI(I) = TSC(I+77)                                     PROG2720
     378         DWX1(I) = TSC(I+88)                                     PROG2730
     379         TBWPI(I) = TSC(I+99)                                    PROG2740
     380         THWPI(I) = TSC(I+110)                                   PROG2750
     381         VFWPI(I) = TSC(I+121)                                   PROG2760
     382         WPNLS(I) = TSC(I+132)                                   PROG2770
     383         TPNLW(I) = TSC(I+143)                                   PROG2780
     384         TBCNT(I) = TSC(I+154)                                   PROG2790
     385         DEFF1(I) = TSC(I+165)                                   PROG2800
     386         YBUD(I) = TSC(I+176)                                    PROG2810
     387         YBLD(I) = TSC(I+187)                                    PROG2820
     388    411  CONTINUE                                                PROG2825
     389   C                                                            PROG2830
     390   C          **SETUP DV DATA FOR BASIC OPT PASS**              PROG2840
     391    420  ISC = IOPS                                              PROG2850
     392         ICD = IOPC                                              PROG2860
     393         NODH = ND(4)                                            PROG2870
     394         D(375) = TCNST(1)                                       PROG2880
     395         D(376) = TCNST(2)                                       PROG2890
     396         D(380) = TCNST(5)                                       PROG2900
     397         D(381) = TCNST(6)                                       PROG2910
     398         D(382) = TCNST(7)                                       PROG2920
     399         GO TO 210                                               PROG2930
     400   C                                                            PROG2940
     401   C                                                            PROG3000
     402   C          **END OF CALC. RESET DATA AND EXIT**              PROG3010
     403    400  DO 401 I=1,4                                           PROG3020
     404         D(I+374) = TCNST(I)                                     PROG3030
     405         D(I+379) = TCNST(I+4)                                   PROG3040
     406    401  CONTINUE                                               PROG3050
     407   C                                                            PROG3080
     408   C          ***SET XMISC(3)=1 FOR NORMAL RETURN--CONTINUE TO OLAY 17**PROG3910
     409         XMISC(3) = D(1)                                         PROG3920
     410   C                                                            PROG3930
     411   C                                                            PROG3980
     412         RETURN                                                  PROG3988
     413         END                                                     PROG3998
     414   C*********************.  -  ********************************************
     415   C
     416   C       *****SUBROUTINE DMYBA*****
     417   C   ***DEADWEIGHT AND COUPLE ARM ADJUSTMENT FOR PASS (1)***
     418   C
     419   C*************************************************************************
     420   C
     421         SUBROUTINE DMYBA                                        DMYB0010
     422   C                                                            DMYB0011
     423   C     ***ADJUSTMENT SUBR FOR ASSUME DH AND Y(BAR) FOR DM/GH PASS***  DMYB0020
     424   C              11-15-71 (4A-814-X4 BASIC AND X4 O/LAY          DMYB0030
     425   C            **YBUI, YBLI = F(ADJ. NX/ASSUMED NX).667  D(114)  DMYB0040
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CARD NO **** CONTENTS ****

```
C            **NOM=F(ADJ. WT/IN) * F(ADJ. NX/ASSUMED NX).725  (D(113) DWYB0050
C                                                                     DWYB0060
      COMMON T(6220)                                                  DWYB0070
      COMMON /IPRINT/ IP(80)                                          DWYB0071
C                                                                     DWYB0080
      DIMENSION D(2060),CD(2000),ND(100),DC(100),TSEC(300),           DWYB0090
     1YBUD(11),YBLD(11),YBUI(11),YBLI(11),                            DWYB0091
     2DWMI(11),DBMI(11),DNXI(11),ALPH(11),DWM(11),                    DWYB0092
     3DEFF(11),TBWP1(11),TDWP1(11),TBD(11),                           DWYB0093
     5TBCWT(11),VFWP1(11),                                            DWYB0095
     8RLOS(132),                                                      DWYB0098
     9TT(24),TR(17) TDGW(11)                                          DWYB0099
C                                                                     DWYB0100
      EQUIVALENCE (D(1),T(2081)),(CD(1),T(4121)),(ND(1),T(6121)),     DWYB0110
     1(DC(1),D(1401)),(TSEC(1),CD(1501)),(TT(1),T(1317)),             DWYB0111
     2(TR(1),T(1300)),(TDGW(1),T(430)),(DGWR1,TDGW(1)),               DWYB0112
     3(DKDW3,D(113)),(DKYB1,D(114)),(ULTLF,D(122)),(UPNZ,D(285)),     DWYB0113
     4(ALPH(1),T(565)),(DWMI(1),T(701)),(DBMI(1),T(712)),             DWYB0114
     5(DNXI(1),T(723)),(DEFF1(1),T(800)),(TBWP1(1),T(745)),           DWYB0115
     6(TDWP1(1),T(767)),(TBD(1),T(530)),(DWM(1),T(609)),              DWYB0116
     7(YBUD(1),T(679)),(YBLD(1),T(690)),(DGWI,T(22)),                 DWYB0117
     8(YBUI(1),TSEC(133)),(YBLI(1),TSEC(188)),(NPAGE,ND(85)),(IOW,ND(6))DWYB0118
     9),(J,ND(26)),(L,ND(27)),(M,ND(28)),(NODW,ND(56)),(NCASE,ND(60))   DWYB0119
     B,(DMISC,T(19)),(TBCWT(1),T(789)),(VFWP1(1),T(756)),(DLTBX,T(180))DWYB0121
     C,(K,ND(29))                                                     DWYB0122
     D,(RLOS(1),CD(400))                                              DWYB0123
C                                                                     DWYB0129
C                                                                     DWYB0140
C            ***SET K=2 FOR DEADWEIGHT PRINT HEAD 6) SUBR DEADW***    DWYB0150
  100 K = ND(2)                                                       DWYB0160
C                                                                     DWYB0170
C            ***SETUP FOR 3-PASS ITERATION FOR DW/YBAR EFFECTS ON ID=J*DWYB0180
C              *TEST BKPRT THEN INITIALIZE YBAR ASSUMED=YBAR DESIGN*  DWYB0190
  101  J = ND(1)                                                      DWYB0200
C                                                                     DWYB0202
C            ***CHECK FOR BK PRINT--ID=IP(24,25)***                   DWYB0202
C             *IP 25 = PRINT AT NODW=1 ONLY*                          DWYB0202
C              *IP 24 = PRINT FOR ALL NODW GREATER THAN 1*            DWYB0202
C
      IF(NODW - ND(1))1201,1201,1205
C
 1201 IF(IP(25))1202,1202,110
 1202 WRITE(6,1203)
 1203 FORMAT(1H1,89X,20H** DWYBA - IP(25) **)
      GO TO 200
C
 1205 IF(IP(24))1206,1206,110
 1206 WRITE(6,1207)
 1207 FORMAT(1H1,89X,20H** DWYBA - IP(24) **)
C
  200 WRITE (6,201)NCASE,        IOW,NODW,DGWI,DGWRI                  DWYB0209
C                                                                     DWYB0210
  201  FORMAT (10H      CASE I .14X,44H-**-DEADWEIGHT AND Y-BAR ADJUSTMENTDWYB0211
     1 DATA-**-/1H0,17X,                         8H  IOW=I1,7H  NODW=DWYB0212
     2I1,8H  DGW=F9.1,8H  DGWRI=F8.5,/86H0 STA  DEFF(A)  YBU(A)  YBU(D) DWYB0213
     3 YBL(A)  YBL(D)  TB-W/IN   TB-M(A)   TB-M(D)   NX(D) )          DWYB0214
C                                                                     DWYB0219
  202  FORMAT (1H 2X,I2,F9.4,4F8.4,F8.4,2F11.1,F8.1)                  DWYB0220
C                                                                     DWYB0221
      DO 203 L=1,11                                                   DWYB0222
      M = ND(12) - L                                                  DWYB0223
      WRITE (6,202)L,DEFF1(L),YBUI(M),YBUD(M),YBLI(M),YBLD(M),TBWP1(L),DDWYB0224
     1WMI(L ,DWM(L),DNXI(L)                                           DWYB0225
  203  CONTINUE                                                       DWYB0226
C                                                                     DWYB0229
C            *****START LOOP. COMPUTE NEW D(PRIME) AND DELTA MOM***** DWYB0230
C                 *MOVE YBUD,YBLD*                                    DWYB0231
  110  DO 1100 L=1,11                                                 DWYB0235
      YBUI(L) = YBUD(L)                                               DWYB0236
      YBLI(L) = YBLD(L)                                               DWYB0237
 1100 CONTINUE                                                        DWYB0238
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CARD NO **** CONTENTS ****

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C                                                                       DHYB0239
      DO 119 M=1,11                                                     DHYB0240
      L = ND(12) - M                                                    DHYB0250
      TR(1) = TBD(M) - YBUI(L) - YBLI(L)                                DHYB0260
      IF (TR(1) - D(1)) 111,111,112                                     DHYB0270
  111 TR(1) = DEFFI(M)                                                  DHYB0280
      IF (DEFFI(M)) 1110,1110,112                                       DHYB0281
 1110 TR(1) = D(1)                                                      DHYB0282
      DEFFI(M) = D(1)                                                   DHYB0283
  112 TR(2) = ULTLF*DGWR1*ALPH(M)*RLDS(M+11) + UPNZ*(DBMII(M) - DBM(M))*DHYB0290
     1RLDS(M+77)                                                        DHYB0291
C                                                                       DHYB0300
C                **COMPUTE NX RATIOS**                                  DHYB0310
      TR(5) = D(1)                                                      DHYB0311
      IF (DBMII(M)) 1120,116,1121                                       DHYB0312
 1120 DBMII(M) = ABS(DBMII(M))                                          DHYB0315
 1121 TR(3) = TR(2)/ABS(DBMII(M))                                       DHYB0320
      IF (TR(3) + 0.90) 1122,1123,1123                                  DHYB0321
 1122 TR(3) = -0.90                                                     DHYB0322
 1123 TR(4) = D(1) - TR(1)/DEFFI(M)                                     DHYB0330
C                                                                       DHYB0340
C                 K(YBAR)0                                              DHYB0350
C
      VAR = D(1) + TR(3) + TR(4)
C
      IF(VAR)301,302,302
  301 YBUI(L) = YBUD(L)
      YBLI(L) = YBLD(L)
C
  304 TOWPI(M) = 0.0
      GO TO 119
C
  302 TR(5) = VAR**DKYB1
      TR(1) = TBD(M) - TR(5)*(YBUD(L) +YBLD(L))                         DHYB0370
      IF (TR(1) - D(1)) 113,113,114                                     DHYB0380
  113 TR(1) = DEFFI(M)                                                  DHYB0390
  114 TR(4) = D(1) - TR(1)/DEFFI(M)                                     DHYB0400
C
      VAR = D(1) + TR(3) + TR(4)
C
      IF(VAR)301,303,303
C
  303 TR(5) = VAR**DKYB1
  116 YBUI(L) = YBUD(L)*TR(5)                                           DHYB0420
      YBLI(L) = YBLD(L)*TR(5)                                           DHYB0430
C                                                                       DHYB0440
C              **CORRECT BOX WT/IN AND DH(MOM)**                        DHYB0450
C               *INCLUDE ADJ. FOR VF AND MISC WT/IN DUE TO DELTA TB(ST)*DHYB0451
C               *DELTA(VFWPI) = SMALLER OF .9 VFWPI OR .4 TOWPI/DEL(TB)*DHYB0452
C               *DELTA(MISC) = DMISC*(TOWPI - DELTA(VFWPI))*            DHYB0453
C               *FINAL DELTA WT/IN= TOWPI - DELTA(VFWPI) + DELTA(MISC)* DHYB0454
C                                                                       DHYB0455
C               *ADJUST CONC WTS FOR TB(ST) CHANGE*                     DHYB0456
C               *K(CONC)= SQRT(K(WT/IN)+ 1)*                            DHYB0457
C                                                                       DHYB0458
C               *K(WT/IN) MUST BE GREATER THAN (-1.0)--MIN=(-.90)**     DHYB0459
C               *TEST FOR MIN K*                                        DHYB0460
C
      VAR = D(1) + TR(3) + TR(4)
C
      IF(VAR)304,305,305
C
  305 TR(6) = VAR**DKOW3 - D(1)
      IF (TR(6) + 0.90) 110,1100,1100                                   DHYB0465
  110 TR(6) = -0.90                                                     DHYB0466
 1100 TOWPI(M) = TR(6)*TBWPI(M)                                         DHYB0470
      TR(7) = 0.4*TOWPI(M)/DLTBX                                        DHYB0471
      TR(8) = 0.9*VFWPI(M)                                              DHYB0472
      IF (TOWPI(M)) 1101,119,1102                                       DHYB0475
 1101 TR(8) = -TR(8)                                                    DHYB0476
 1102 IF (ABS(TR(7)) - ABS(TR(8))) 1103,1104,1104                       DHYB0480
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CARD NO **** CONTENTS ****

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 1103 TR(8) = TR(7)                                                 DWYB0481
 1104 TR(9) = DMISC*(TDWPI(M) - TR(8))                              DWYB0482
      TDWPI(M) = TDWPI(M) - TR(8) + TR(9)                           DWYB0485
C                                                                   DWYB0488
C                 *SCALE CONC WTS*                                  DWYB0489
      TR(10) = SQRT(TR(6) + D(1))                                   DWYB0490
      TBCWT(M) = TR(10)*TBCWT(M)                                    DWYB0495
 110  CONTINUE                                                      DWYB0498
C                                                                   DWYB0499
C               **COMPUTE DWT(V,M)**                                DWYB0500
 120  CALL DEADW                                                    DWYB0510
C                                                                   DWYB0520
C               **TEST FOR LOOP**                                   DWYB0530
 130  J = J + ND(1)                                                 DWYB0540
      IF (ND(4) - J) 210,210,110                                    DWYB0550
C                                                                   DWYB0560
C                                                                   DWYB1130
C                 *PRINT ON IP 24 OR 25*                            DWYB1135
  210 IF(NODW - ND(1))1220,1220,1225
 1220 IF(IP(25))1221,1221,199
 1221 WRITE(6,1203)
      GO TO 2102
 1225 IF(IP(24))1226,1226,199
 1226 WRITE(6,1207)
 2102 WRITE (6,211)                                                 DWYB1151
 211  FORMAT (42H- STA  YBU(N)  YBL(N)  DL-W/IN    TB-M(N))         DWYB1160
 212  FORMAT (1H 2X,I2,2F8.4,F9.4,F13.1)                            DWYB1170
      DO 213 L=1,11                                                 DWYB1180
      M = ND(12) - L                                                DWYB1190
      WRITE (6,212)L,YBUI(M),YBLI(M),TDWPI(L),DWM(L)                DWYB1200
 213  CONTINUE                                                      DWYB1210
C                                                                   DWYB1230
C                EXIT                                               DWYB9000
 199  RETURN                                                        DWYB9990
      END                                                           DWYB9999
C*********************************************************************
C
C       *****SUBROUTINE DEADW*****
C   ***TORQUE-BOX INERTIA LOAD EVALUATION***
C
C*********************************************************************
C
      SUBROUTINE DEADW                                              DEAD0010
C                                                                   DEAD0011
C      DW MOM,V AND CP CALC SUBR -- 1-03-66---                      DEAD0020
C                                                                   DEAD0030
C                                                                   DEAD0050
C                                                                   DEAD0070
      COMMON T(2060) D(2060),CD(2000),ND(100)                       DEAD0080
      COMMON /IPRINT/ IP(80)                                        DEAD0081
C                                                                   DEAD0090
      DIMENSION  DC(100),TT(24),TSEC(300),                          DEAD0100
     1DWV(11),DWM(11),DWT(11),                                      DEAD0101
     2DCOLV(11),DCOLM(11),DCOLT(11),                                DEAD0102
     3WPNLS(11),TPNLW(11),TBCWT(11),                                DEAD0103
     4TBWPI(11),VFWPI(11),TMWPI(11),                                DEAD0104
     8YSTRC(11),TDWPI(11)                                           DEAD0109
C                                                                   DEAD0110
      EQUIVALENCE (DC(1),D(1401)),(TSEC(1),CD(1501)),(TT(1),T(1317)),  DEAD0120
     1(YSTRC(1),TSEC(186)),(TANDX,T(87)),(CCLDX,T(88)),             DEAD0121
     2(DWV(1),T(598)),(DWM(1),T(609)),(DWT(1),T(620)),              DEAD0122
     3(DELWD,T(1871)),                                              DEAD0123
     4(DCOLV(1),T(230)),(DCOLM(1),T(241)),(DCOLT(1),T(252)),        DEAD0124
     5(WPNLS(1),T(645)),(TPNLW(1),T(656)),(TBCWT(1),T(709)),        DEAD0125
     6(TBWPI(1),T(745)),(VFWPI(1),T(756)),(TMWPI(1),T(778)),        DEAD0126
     7(TDWPI(1),T(787)),                                            DEAD0127
     8(DGWI,T(22)),(NPAGE,ND(85)),(NCASE,ND(60)),                   DEAD0128
     9(NODW,ND(56)),(IOW,ND(61)),(N,ND(31)),(I,ND(30)),(K,ND(29))   DEAD0129
C                                                                   DEAD0130
C                                                                   DEAD0200
C              **STA(1)**                                           DEAD0210
```

CARD NO **** CONTENTS ****

```
      100 TT(1) = DELWG*TBCWT(11)                                    DEAD0220
          DWV(11) = TT(1)                                            DEAD0230
          DWM(11) = DC(3)                                            DEAD0240
          DWT(11) = TT(1)*(YSTRC(11)*TANDX + CCLDX)                  DEAD0250
      C                                                              DEAD0260
      C         **PNL WTS/CG FOR BOX AND WING MISC WTS.  10 PNLS*    DEAD0270
      C          *SCALE TB WT/IN(ST) TO TOTAL DIST. WTS*             DEAD0280
      110 DO 119 I=1,10                                              DEAD0290
          N = ND(1) - I                                              DEAD0300
          TT(2) = YSTRC(I) - YSTRC(I+1)                              DEAD0310
          TT(3) = TPNLW(N)/WPNLS(N)                                  DEAD0320
          TT(4) = TT(3)*TBWPI(N)                                     DEAD0330
          TT(5) = TT(3)*TBWPI(N+1)                                   DEAD0340
      C                                                              DEAD0350
      C         **SUM WT/IN.  CALC CP.  CHECK FOR ZERO AND LIMITS**  DEAD0360
          TT(6) = TT(4) + VFWPI(N) + THWPI(N) + TDWPI(N)             DEAD0370
          TT(7) = TT(5) + VFWPI(N+1) + THWPI(N+1) + TDWPI(N+1)       DEAD0380
          TT(9) = 0.6667                                             DEAD0390
          IF (TT(6)) 113,113,111                                     DEAD0400
      111 TT(8) = TT(7)/TT(6)                                        DEAD0410
          TT(9) = 0.3334                                             DEAD0420
          IF (TT(8)) 113,113,112                                     DEAD0430
      112 TT(9) = (D(1) + D(2)*TT(8))/(D(3) + D(3)*TT(8))            DEAD0440
      113 TT(10) = TT(9)*TT(2)                                       DEAD0450
      C                                                              DEAD0460
      C         *PNL WT FOR FINAL DIST. WTS. INCL DELTA TB WT CHANGE* DEAD0470
          TT(11) = DELWG*TT(2)/D(2)*(TT(6) + TT(7))                  DEAD0480
          TT(12) = DELWG*TBCWT(N)                                    DEAD0490
      C                                                              DEAD0500
      C         *V,M,T DUE TO ALL WT ITEMS*                          DEAD0510
          DWV(N) = DWV(N+1) + TT(11) + TT(12)                        DEAD0520
          DWM(N) = DWM(N+1) + TT(2)*DWV(N+1) + TT(11)*TT(10)         DEAD0530
          DWT(N) = DWT(N+1) + TT(11)*((YSTRC(I+1) + TT(10))*TANDX + CCLDX) +DEAD0540
         1TT(12)*(YSTRC(I+1)*TANDX + CCLDX)                          DEAD0550
      119 CONTINUE                                                   DEAD0560
      C                                                              DEAD0570
      C                                                              DEAD0578
      C         ***ADD V, M, T DUE TO DELTA CDL WTS***               DEAD0579
          DO 1190 I=1,11                                             DEAD0580
          DWV(I) = DWV(I) + DCDLV(I)                                 DEAD0581
          DWM(I) = DWM(I) + DCDLM(I)                                 DEAD0582
          DWT(I) = DWT(I) + DCDLT(I)                                 DEAD0583
     1190 CONTINUE                                                   DEAD0585
      C                                                              DEAD0589
      C         ***CHECK BK PRINT--ID=IP(24,25)***                   DEAD0590
      C          *IP 25 FOR NODW 1 ONLY*                             DEAD0600
      C          *IP 24 FOR NODW GREATER THAN 1*                     DEAD0600
          IF(NODW - ND(1))1201,1201,1205
     1201 IF(IP(25))1202,1202,199
     1202 WRITE(6,1203)
     1203 FORMAT(1H1,89X,20H** DEADW - IP(25) **)
          GO TO 122
      C
     1205 IF(IP(24))1206,1206,199
     1206 WRITE(6,1207)
     1207 FORMAT(1H1,89X,20H** DEADW - IP(24) **)
      C                                                              DEAD0658
      C         ***TEST FOR TYPE OF HEADING. K=1=PROG, K=2=DWYBA***  DEAD0659
      122 IF IK - ND(1)) 1220,1220,1221                              DEAD0660
     1220 WRITE (6,123)NCASE                                         DEAD0670
          GO TO 1222                                                 DEAD0675
      C                                                              DEAD0678
     1221 WRITE (6,1230)                                             DEAD0680
     1222 WRITE (6,1231)  IGW,NODW,DGWI                              DEAD0690
      C                                                              DEAD0700
      123 FORMAT (10H0     CASEI4,12X,62H-**-DEADWEIGHT SUMMARY DATA--TORQUEDEAD0710
         1-BOX SYNTHESIS RESULTS-**- /)                              DEAD0711
     1230 FORMAT (52H0              -**-DEADWEIGHT ADJUSTMENT RESULTS-**-/) DEAD0720
     1231 FORMAT (1H ,13X,     7H   IGW=I1,8H   NODW=I1,7H   DGW=F8.1,/108HDEAD0730
         1 0  STA     TB(V)       TB(M)      TB(T)       TBWPI    VFWPI    THWPIDEAD0731
         2    TDWPI     TBCWT    W-DIST   TW-DIST )                 DEAD0732
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CARD NO   ****                        CONTENTS                              ****
          C                                                                 DEAD0739
          C                                                                 DEAD0740
            124  FORMAT (1H 3X,I2,F10.1,F12.1,F11.1,F10.4,3F9.4,F10.2)     DEAD0750
            125  FORMAT (1H 3X,I2,F10.1,F12.1,F11.1,F10.4,3F9.4,F10.2)     DEAD0760
          C                                                                 DEAD0770
                 DO 126 N=1,10                                              DEAD0780
                 WRITE (6,124)N,DWV(N),DWM(N),DWT(N),TDPT(N),VTPT(N),TDPT(N),TDSCAD0790
                1PT(N),TDCNT(N),APRESS(N),TPRES(N)                          DEAD0800
            126  CONTINUE                                                   DEAD0810
                 WRITE (6,125)ND(11),DWV(11),DWM(11),DWT(11),TDPT(11),VTPT(11),THDEAD0820
                1NPT(11),TDPT(11),TDCNT(11)                                 DEAD0830
          C                                                                 DEAD0840
          C                                                                 DEAD0850
          C                                                                 DEAD9900
            199  RETURN                                                     DEAD9990
                 END                                                        DEAD9999
          C*********************************************************************
          C
          C          *****SUBROUTINE VLOAD*****
          C   ***NET ULTIMATE DESIGN LOADS EVALUATION***
          C
          C*********************************************************************
          C
                 SUBROUTINE VLOAD                                           VL000010
          C                                                                 VL000001
          C****************BASIC VERSION OF SUBROUTINE VLOAD -OVERLAY(30,0)*******VL000011
          C          ******SAME AS SUBR VLOAD1 IN OVERLAY(16,0)******       VL000012
          C                                                                 VL000019
          C                                                                 VL000020
          C              ***NET ULT DESIGN LOADS CALC SUBR***               VL000030
          C                                                                 VL000040
          C              ***LID = TYPE OF LOAD SET ID***                    VL000050
          C                *1 = GROSS, CALC*                                VL000060
          C                *2 = GROSS, INPUT*                               VL000070
          C                *3 = INPUT, NET*                                 VL000080
          C                                                                 VL000090
          C                                                                 VL000100
          C                                                                 VL000150
                 COMMON T(2060),D(2060),CD(2000),ND(100)                    VL000160
                 COMMON /IPRINT/ IP(83)                                     VL000161
                 COMMON /MISC/ XMISC(100)
          C                                                                 VL000170
                 DIMENSION DC(100),TT(24),TSEC(300),                        VL000180
                1ALPV(11),ALPM(11),ALPT(11),ALNV(11),ALNM(11),ALNT(11),     VL000190
                2TDGH(16),ULTPT(11),ULTNT(11),                              VL000192
                3DWV(11),DWM(11),DWT(11),SDWV(11),SDWM(11),SDWT(11),        VL000193
                4UVFS(11),UVRS(11),DVFS(11),DVRS(11),                       VL000194
                5TDWV(11),TDWM(11),TDWT(11),                                VL000195
                6GJROD(11),DVFSRS(11),                                      VL000196
                8RLDS(132),                                                 VL000198
                9ULTPV(11),ULTPM(11),ULTNV(11),ULTNM(11)                    VL000199
          C                                                                 VL000210
                 EQUIVALENCE (DC(1),D(1901)),(UTMZ,D(265)),(UTTZ,D(255)),   VL000220
                1(ULTLF,D(122)),(TT(1),T(1317)),(TSEC(1),CD(1501)),         VL000221
                2(ALPV(1),T(554)),(ALPM(1),T(565)),(ALPT(1),T(877)),(ALNV(1),T(576)VL000222
                3),(ALNM(1),T(587)),(ALNT(1),T(898)),(TDGH(1),T(430)),      VL000223
                4(DWV(1),T(598)),(DWM(1),T(609)),(DWT(1),T(620)),           VL000224
                5(ULTPM(1),TSEC(1)),(ULTPV(1),TSEC(12)),(ULTNV(1),TSEC(111)),(ULTNMVL000225
                6(1),TSEC(122)),(GJROD(1),T(653)),(DGHL,T(22)),             VL000226
                7(DGHR,TDGH(2)),(DGHX,TDGH(3)),(TDXX,TDGH(4)),              VL000227
                8(NCASE,ND(60)),(NOON,ND(56)),(IGH,ND(61)),(IOPT,ND(82)),   VL000228
                9(NPAGE,ND(85)),(LID,ND(54)),(N,ND(35)),(K,ND(31))          VL000229
          C                                                                 VL000230
                 EQUIVALENCE (UVFS(1),TSEC(23)),(UVRS(1),TSEC(34)),         VL000240
                1(ULTPT(1),TSEC(144)),(ULTNT(1),TSEC(155)),                 VL000241
                2(SDWV(1),T(844)),(SDWM(1),T(855)),(SDWT(1),T(866)),        VL000242
                3(RLDS(1),CD(400)),                                         VL000243
                8(TDWV(1),CD(1958)),(TDWM(1),CD(1979)),(TDWT(1),CD(1990)),  VL000248
                9(DVFSRS(1),CD(1924)),(DVFS(1),D(842)),(DVRS(1),D(853))     VL000249
                 DIMENSION STMV(11),STMM(11),STMT(11)
                 EQUIVALENCE (STMV(1),T(811)),(STMM(1),T(822)),(STMT(1),T(833))
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CARD NO   ****                    CONTENTS                    ****
          C                                                          VL000250
          C  ** REVERSE THE LOAD FACTORS IF THE N. T. LOADS HAVE BEEN REVERSED **
          C
                IF(D(209))15,16,14
             15 IF(XMISC(42))16,16,8
              8 SAVE = UNNZ
                UNNZ = UPNZ
                UPNZ = SAVE
                GO TO 16
             14 UNNZ = UPNZ
          C
          C              ***CHECK OK PRINT***                        VL000251
          C               *IP 25 FOR NOOM = 1 ONLY*                  VL000252
          C                *IP 24 FOR NOOM GREATER THAN 1*
          C                *SET TT(3) TO 0 FOR NO PRINT, 1 FOR PRINT*  VL000254
             16 TT(3) = DC(3)                                        VL000260
                IF(NOOM - ND(1))1201,1201,1205
           1201 IF(IP(25))1202,1202,1009
           1202 WRITE(6,1203)
           1203 FORMAT(1H1,89X,20H** VLOAD - IP(25) **)
                GO TO 1003
          C
           1205 IF(IP(24))1206,1206,1003
           1206 WRITE(6,1207)
           1207 FORMAT(1H1,89X,20H** VLOAD - IP(24) **)
          C
           1003 TT(3) = D(1)                                         VL000275
                WRITE (6,1004)NCASE,      IGH,NOOM,IOP1,DGH1          VL000280
                WRITE (6,1005)                                       VL000285
          C                                                          VL000289
           1004 FORMAT (10H      CASEI4,16X,47H-**-DESIGN LOADS/1000 AND REQD GJ/1VL000290
               1,000,000-**-/1H0,17X,6H  IGH=,I1,7H  NOOM=,I1,
               2       7H  IOP1=I1,6H  DGH=F9.1)                     VL000292
          C                                                          VL000299
           1005 FORMAT (108HU  STA   +V(ULT)    +M(ULT)   +T(ULT)  -V(ULT)   -M(ULVL000300
               1T)   -T(ULT)  VOH(IG)   MOH(IG)   TOH(IG)   GJ(RLQD)  )  VL000301
          C                                                          VL000302
            104 FORMAT (1H 3X,I2,F10.3,F11.2,F10.2,F9.3,F10.2,F10.2,F9.3,F10.2,F10VL000303
               1.2,F12.3)                                            VL000304
          C                                                          VL000309
           1009 DO 107 N=1,11                                        VL000310
                K = ND(12) - N                                       VL000315
                TT(1) = DC(3)                                        VL000320
                TT(7) = DC(3)                                        VL000325
                TT(2) = DC(3)                                        VL000330
                TT1 = 0.0
                TT2 = 0.0
                TT7 = 0.0
                IF (LID - ND(2)) 101,101,102                         VL000340
          C                                                          VL000350
          C                  *PRINT ON TT(3)=1.0*                    VL000351
          C                **SETUP INERTIA DATA**                    VL000360
            101 TT(1) = SOHV(N) - STHV(N)
                TT1 = (DHV(N) + STHV(N)) * DDHK * TBXX
                TT(2) = SOHM(N) - STHM(N)
                TT2 = (DHM(N) + STHM(N)) * DDHK * TBXX
                TT(7) = SOHT(N) - STHT(N)
                TT7 = (DHT(N) + STHT(N)) * DDHK * TBXX
                AUPNZ = ABS(UPNZ)
                AUNNZ = ABS(UNNZ)
          C                                                          VL000389
            102 ULTPV(K) = ABS(ULTLF * ALPV(N) * DGHR -
               *AUPNZ * (TT(1) * RLDS(N+66 ) + TT1 * RLDS(N    )))
          C                                                          VL000399
                ULTNV(K) = ABS(ULTLF * ALNV(N) * DGHR +
               *AUNNZ * (TT(1) * RLDS(N+99 ) + TT1 * RLDS(N+33)))
          C                                                          VL000409
                ULTPM(K) = ABS(ULTLF * ALPM(N) * DGHR -
               *AUPNZ * (TT(2) * RLDS(N+77 ) + TT2 * RLDS(N+11)))
          C                                                          VL000414
                ULTNM(K) = ABS(ULTLF * ALNM(N) * DGHR +
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CARD NO **** CONTENTS ****

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     *AUNNZ * (TT(2) * RLDS(N+110) + TT2 / RLDS(N+44)))
C                                                                VL000419
      ULTPT(K) = ABS(ULTLF * ALPT(N) * DGWR -
     *AUPNZ * (TT(7) * RLDS(N+88 ) + TT7 * RLDS(N+77)))
C                                                                VL000424
      ULTNT(K) = ABS(ULTLF * ALNT(N) * DGWR +
     *AUNNZ * (TT(7) * RLDS(N+121) + TT7 * RLDS(N+55)))
C                                                                VL000429
C                FS/RS LOADS                                     VL000430
      UVFS(K) = ULTPV(K)*DVFS(N)*DVFSRS(N)                       VL000440
      UVRS(K) = ULTPV(K)*DVRS(N)*(D(1) - DVFSRS(N))              VL000450
      IF (TT(3)) 109,109,103                                     VL000451
  103 TT(8) = ULTPV(K)/1000.0                                    VL000452
      TT(9) = ULTPM(K)/1000.0                                    VL000453
      TT(10)= ULTPT(K)/1000.0                                    VL000454
      TT(11)= ULTNV(K)/1000.0                                    VL000455
      TT(12)= ULTNM(K)/1000.0                                    VL000456
      TT(13)= ULTNT(K)/1000.0                                    VL000457
      TT(14)= (TT1 + TT(1))/ 1000.0
      TT(15)= (TT2 + TT(2))/ 1000.0
      TT(16)= (TT7 + TT(7))/ 1000.0
      TT(17) = GJROD(N)/1000000.0                                VL000461
      WRITE (6,104)N,(TT(I+7),I=1,10)                            VL000465
C                                                                VL000470
C                                                                VL000472
      TOWV(K) = TT(1) + TT1
      TOWM(K) = TT(2) + TT2
      TOWT(N) = TT(7) + TT7
C                                                                VL000479
  109 CONTINUE                                                   VL000480
C                                                                VL000490
      IF(D(289))10,199,199
   10 IF(XMISC(42))199,199,11
   11 SAVE = UNNZ
      UNNZ = UPNZ
      UPNZ = SAVE
C                                                                VL001990
C           ***EXIT***                                           VL001990
  199 RETURN                                                     VL001998
      END                                                        VL001999
C*********************************************************************
C
C       *****SUBROUTINE TBOPT*****
C   ***TOTAL TORQUE-BOX WEIGHT OPTIMIZATION CONTROL ***
C
C*********************************************************************
C
      SUBROUTINE TBOPT                                           CNSR0020
C                                                                CNSR0021
C           **TORQUE-BOX OPTIMIZATION CONTROL ROUTINE-11-18-71**  CNSR0022
                                                                 CNSR0029
C                                                                CNSR0100
C      SETUP CONTROLS FOR .I-SECTIC./10 F/ . DESIGN              CNSR0110
C                                                                CNSR0120
C                                                                CNSR0140
      COMMON T(2060),D(2060),CD(2000),ND(100),TH(900)            CNSR0150
      COMMON /IPRINT/ IP(80)                                     CNSR0151
      COMMON /MISC/ XMISC(100)                                   CNSR0152
C                                                                CNSR0160
      DIMENSION DC(100),TDC(200),TSC(420),TSS(100),THT(400),TSEC(300), CNSR0170
     1YSTRC(11),TC(400),TT(24),TO(40),                           CNSR0171
     2          DLCS(24),SWT(11),                                CNSR0172
     3YBUD(11),YBLD(11),                                         CNSR0173
     4TBW(11),                                                   CNSR0174
     5WPNLS(11),TPNLH(11),TDCHT(11),                             CNSR0175
     6TBWPI(11),TWPI(11),VFWPI(11),                              CNSR0176
     7DEFFI(11),DNXI(11),                                        CNSR0177
     8DCOST(11),DCNOS(11),                                       CNSR0178
     9DOP2(3),DOP3(3),DOP4(9),DOP5(9),IOPD(5)                    CNSR0179
C                                                                CNSR0180
C                                                                CNSR0190
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CARD NO  ****                          CONTENTS                          ****
  923    C                                                                CNSR0200
  924          EQUIVALENCE (DC(1),D(1401)),(TDC(1),T(1134)),(TSC(1),T(1194)),  CNSR0210
  925         1(TSS(1),T(1981)),(TWT(1),CD(1)),(TSEC(1),CD(150)),          CNSR0211
  926         2(TC(1),T(1901)),(TO(1),T(1920)),(TT(1),T(1317)),            CNSR0212
  927         3(YSTAC(1),TSEC(186)),                                       CNSR0213
  928         4                  (QLCS(1),D(1402)),(DCLMO,T(1187)),        CNSR0214
  929         5(CNSID,D(1461)),(MMVID,T(57)),(TBW(1),T(1542)),(DTPVT,D(200)),  CNSR0215
  930         6(I,ND(29)),(K,ND(32)),(N,ND(31)),(ICD,ND(49)),(ISC,ND(22)),  CNSR0216
  931         7(IOPT,ND(73)),(IOPI,ND(74)),(IOPD(1),ND(75)),(IOPJ,ND(80)),  CNSR0217
  932         8(IOPP,ND(81)),(IOP1,ND(82)),(IOPS,ND(83)),(IOPC,ND(C4)),    CNSR0218
  933         9(ISEC,ND(55)),(NDDM,ND(56)),(IFW,ND(93)),(IGM,ND(61)),(IGT,ND(57))CNSR0219
  934    C                                                                CNSR0220
  935          EQUIVALENCE (SWT(1),T(734)),(YBUD(1),T(1679)),(YBLD(1),T(1690)),  CNSR0230
  936         1(DELTA(1),T(1800)),(DMX(1(1),T(723)),                       CNSR0231
  937         2(DCBST(1),D(765)),  (DCMOS(1),D(776)),                      CNSR0232
  938         3(WPNLS(1),T(1645)),(TPYLW(1),T(1656)),(TBCWT(1),T(709)),    CNSR0233
  939         4(TBWP(1),T(745)),(TWSP(1),T(778)),(WTSP(1),T(756)),         CNSR0234
  940         7(IPA,ND(23)),(IPB,ND(24)),                                  CNSR0237
  941         8(DOP2(1),D(1367)),(DOP3(1),D(1371)),(DOP4(1),D(1375)),      CNSR0238
  942         9(DOP5(1),D(1387)),(DOPTJ,D(1366))                           CNSR0239
  943    C                                                                CNSR0299
  944    C                                                                CNSR0320
  945    C            ***CHECK XMISC(39) FOR FIRST GW(I) CALL FROM PROG=0***  CNSR0330
  946          IF (XMISC(39)) 2000,2000,1000                              CNSR0340
  947    C                                                                CNSR0350
  948    C            ***XMISC(39)=I-6.  RETURN ID FROM SUBR CNSTR--OLAY 10***  CNSR0360
  949     1000 IF (XMISC(39) - D(2)) 4600,4100,1001                       CNSR0370
  950     1001 IF (XMISC(39) - D(4)) 4200,4520,1002                       CNSR0380
  951     1002 IF (XMISC(39) - D(6)) 4540,4570,4570                       CNSR0390
  952    C                                                                CNSR0400
  953    C     WT. CALC. ID=IC I= AREA, 2=AREA AND PANEL WT.              CNSR0410
  954     2000 IGM=IGT                                                    CNSR0420
  955    C                                                                CNSR0430
  956    C                                                                CNSR0440
  957    C            ****SETUP PRINT ID FOR PRTA, PR.   PRTC, PRTH****   CNSR0450
  958    C             ***IPA = ND(23) = ID FOR PRTA, PRTH.  1.0=PRINT***  CNSR0460
  959    C             ***IPB = ND(24) = ID FOR PRTB, PRTC.  1.0=PRINT***  CNSR0470
  960    C                                                                CNSR0480
  961          IPA = DC(3)
  962          IPB = DC(3)                                                CNSR0660
  963    C
  964          IF(ND(1) - NDDM)300,305,305
  965    C
  966    C            **IPA FOR NDDM GREATER THAN 1**
  967    C
  968      300 IF(IGM-2)301,304,301
  969      301 IF(IP(28))302,302,400
  970      302 IPA = ND(1)
  971          GO TO 400
  972      304 IF(IP(27))305,305,400
  973      305 IPA = ND(1)
  974          GO TO 400
  975    C
  976    C              **IPA FOR NDDM=1**
  977    C
  978      306 IF(IGM - 2)307,308,307
  979    C
  980      307 IF(IP(30))309,309,310
  981      309 IPA = ND(1)
  982          GO TO 310
  983    C
  984      308 IF(IP(29))311,3..,310
  985      311 IPA = ND(1)
  986    C
  987    C            ** IPB (NDDM=1 ONLY)**
  988    C
  989      310 IF(IGM-2)312,316,312
  990      312 IF(IP(32))314,314,400
  991      314 IPB = ND(1)
  992          GO TO 400
  993    C
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CARD NO  ****                          CONTENTS                          ****
  994      316 IF(IP(31))318,318,400
  995      318 IPB = ND(1)
  996    C                                                                CNSR0900
  997    C            ***TEST FOR OPT SEARCH, TYPE AND LOOP STATUS ***    CNSR0910
  998    C           **SETUP STA J ID***                                  CNSR0911
  999     400  IOPJ = ND(5)                                              CNSR0912
 1000          IF (DOPTJ) 4001,4001,4000                                 CNSR0913
 1001     4000 IOPJ = DOPTJ                                             CNSR0915
 1002     4001 IF (ND(2) - IOPJ) 401,401,410                            CNSR0920
 1003      401  IF (ND(3) - NODH) 402,430,404                           CNSR0930
 1004    C                                                               CNSR0940
 1005    C               BASIC OPT CASE                                  CNSR0950
 1006    C           ***CALL 1 TO CNSTR--DLAY ID--RETURN ID=1***         CNSR0951
 1007      402  XMISC(39) = D(1)                                         CNSR0960
 1008           RETURN                                                   CNSR0965
 1009    C                                                               CNSR0969
 1010     4020 GO TO 790                                                CNSR0970
 1011    C                                                               CNSR0980
 1012    C                                                               CNSR0990
 1013    C               TEST FOR 1 OR 2                                 CNSR1000
 1014      404  IF (NODH - ND(1)) 410,410,420                            CNSR1010
 1015    C                                                               CNSR1020
 1016    C            ****BASIC CASE PLUS LAST PASS FOR OPT****          CNSR1030
 1017    C            ***CALL 2 TO CNSTR--DLAY ID--RETURN ID=2***        CNSR1031
 1018      410  XMISC(39) = D(2)                                         CNSR1040
 1019           RETURN                                                   CNSR1045
  020    C                                                               CNSR1049
 1021     4180 IF (ND(2) - NODH) 790,790,700                            CNSR1050
 1022    C                                                               CNSR1060
 1023    C            ***NODH=2, IOPI=2,3,4,5. OPT PASS                  CNSR1070
 1024      420  IOPI = ND(6)                                            CNSR1080
 1025    C                                                               CNSR1088
 1026    C            ***CALL 3 TO CNSTR  DLAY ID--RETURN ID  * *        CNSR1089
 1027           XMISC(39) = D(3)                                         CNSR1090
 1028           RETURN                                                   CNSR1095
 1029    C                                                               CNSR1099
 1030     4200 GO TO 790                                                CNSR1100
 1031    C                                                               CNSR1110
 1032    C            ***NODH=3, IOPI=2,3,4,5. DISCRETE POINT SEARCH FOR OPT.***CNSR1120
 1033      430  IOPD(1) = ND(2)                                          CNSR1130
 1034           IOPD(2) = ND(3)                                          CNSR1140
 1035           IOPD(3) = ND(4)                                          CNSR1150
 1036           IOPD(4) = ND(5)                                          CNSR1151
 1037           IOPD(5) = ND(1)                                          CNSR1152
 1038           IOPP = ND(10)                                            CNSR1153
 1039      431  DO 432 I=1,11                                           CNSR1160
 1040           DCPST(I) = DC(3)                                         CNSR1170
 1041           DCNDS(I) = DC(3)                                         CNSR1180
 1042      432  CONTINUE                                                 CNSR1190
 1043    C           ***SETUP STA I-J AND J+1 - II DATA***               CNSR1250
 1044      434  N = ND(2) - IOPJ                                         CNSR1260
 1045           TD(4) = YSTRC(N) - YSTRC(1)                              CNSR1270
 1046           TD(5) = YSTRC(10) - YSTRC(N-1)                           CNSR1280
 1047    C                                                               CNSR1290
 1048    C            ****TEST FOR TYPE OF OPT SEARCH****                CNSR1300
 1049      440  IF (ND(3) - IOPI) 441,445,446                            CNSR1310
 1050    C                                                               CNSR1320
 1051    C     ***VARI. NOS C  DSTR.  NOT COMPLETED. USE CONST NOS OR DSTR LOGIC.CNSR1330
 1052      441  IF (IOPI - ND(4)) 442,442,443                            CNSR1340
 1053    C                                                               CNSR1348
 1054      442  IOPI = ND(2)                                             CNSR1349
 1055           GO TO 446                                                CNSR1350
 1056      443  IOPI = ND(3)                                             CNSR1359
 1057           GO TO 445                                                CNSR1360
 1058    C                                                               CNSR1370
 1059    C              *ID=3 CONST DSTR*                                CNSR1380
 1060      445  ISC = ND(3)                                              CNSR1390
 1061           TT(I) = D(I)/D(10)                                       CNSR1400
 1062           D(38I) = D(I)                                            CNSR1410
 1063           TD(8) = DOP3(2)                                          CNSR1420
 1064           TD(9) = DOP3(1)                                          CNSR1430
```

CARD NO	**** CONTENTS ****	
1065	TO(10) = DOP3(3)	CNSR1440
1066	TO(11) = DOP3(4)	CNSR1450
1067	C	CNSR1460
1068	GO TO 4460	CNSR1465
1069	C *ID=2, CONST NOS*	CNSR1470
1070	446 ISC = ND(2)	CNSR1480
1071	D(380) = TBH(2) + TBH(3)	CNSR1490
1072	D(381) = D(380)	CNSR1500
1073	TT(1) = D(380)	CNSR1510
1074	TO(8) = DOP2(2)	CNSR1520
1075	TO(9) = DOP2(1)	CNSR1530
1076	TO(10)= DOP2(3)	CNSR1540
1077	TO(11)= DOP2(4)	CNSR1550
1078	4460 IF (TO(11)) 447,447,450	CNSR1560
1079	447 TO(11) = TO(10)/D(2)	CNSR1570
1080	C	CNSR1580
1081	C **SET ICD=0, TEST CONST.**	CNSR1590
1082	450 ICD = DC(3)	CNSR1600
1083	IF (CNSID) 451,452,451	CNSR1610
1084	451 D(375) = TT(1)	CNSR1620
1085	D(376) = TT(1)	CNSR1630
1086	C	CNSR1640
1087	C ***START SEARCH AT POINT 1= MAX VALUE***	CNSR1650
1088	452 TO(22) = D(1)	CNSR1660
1089	IOPI = IOPD(5)	CNSR1670
1090	TO(6) = TO(8)	CNSR1675
1091	IOPT = ND(1)	CNSR1676
1092	C	CNSR1678
1093	C ***CALL 4 TO CNSTR- OLAY 10--RETURN ID=4***	CNSR1679
1094	XMISC(39) = D(4)	CNSR1680
1095	RETURN	CNSR1685
1096	C	CNSR1686
1097	C	CNSR1687
1098	C ***TEST FOR INTERM. PT PRINT. DOPIP=2.0 AND IPA=1**	
1099	4520 IF (IPA)4523,4523,4522	
114	C	CNSR1691
1101	C ***TYPE A PRINT--DESIGN AND WT SUMMARY PAGES***	CNSR1692
1102	4522 CALL PRTA	CNSR1693
1103	C	CNSR1694
1104	4523 TO (21) = TO(6)	CNSR1695
1105	TO(18) = TO(1)	CNSR1696
1106	IOPD(4) = IOPD(5)	CNSR1697
1107	453 TO(24) = TO(21)	CNSR1700
1108	TO(21) = TO(6)	CNSR1701
1109	TO(23) = TO(18)	CNSR1705
1110	TO(18) = TO(1)	CNSR1710
1111	TO(19) = TO(2)	CNSR1720
1112	TO(20) = TO(3)	CNSR1730
1113	IOPI = IOPD(1)	CNSR1740
1114	IOPD(1) = IOPD(2)	CNSR1750
1115	IOPD(2) = IOPD(3)	CNSR1760
1116	IOPD(3) = IOPD(4)	CNSR1770
1117	IOPD(4) = IOPD(5)	CNSR1780
1118	IOPD(5) = IOPI	CNSR1790
1119	TO(8) = TO(6) - TO(18)	CNSR1800
1120	TO(22) = TO(22) + D(1)	CNSR1805
1121	C *POINT 1*	CNSR1810
1122	C	CNSR1813
1123	C ***CALL 5 TO CNSTR--OLAY 10--RETURN ID =5**	CNSR1814
1124	454 XMISC(39) = D(5)	CNSR1815
1125	RETURN	CNSR1820
1126	C	CNSR1821
1127	C ***TEST FOR INTERM. PT PRINT***	CNSR1822
1128	4540 IF (IPA)4543,4543,4542	
1129	4542 CALL PRTA	CNSR1825
1130	C	CNSR1829
1131	4543 IF (TO(18) - TO(1)) 455,456,460	CNSR1830
1132	C	CNSR1839
1133	455 IOPT = ND(2)	CNSR1840
1134	C **INTERM. POINT. OPT=1 OR 1-1**	CNSR1850
1135	456 TO(24) = TO(21)	CNSR1860

CARD NO	****	CONTENTS	****
1136		TO(21) = TO(6)	CNSR1865
1137		TO(6) = TO(6) + TO(11)	CNSR1870
1138	457	TO(23) = TO(18)	CNSR1875
1139		TO(23) = TO(18)	CNSR1876
1140		TO(18) = TO(5)	CNSR1880
1141		TO(19) = TO(2)	CNSR1890
1142		TO(20) = TO(3)	CNSR1900
1143		IOPI = IOPD(1)	CNSR1910
1144		IOPD(1) = IOPD(2)	CNSR1920
1145		IOPD(2) = IOPD(3)	CNSR1930
1146		IOPD(3) = IOPD(4)	CNSR1940
1147		IOPD(4) = IOPD(5)	CNSR1950
1148		IOPD(5) = IOPI	CNSR1960
1149		TO(22) = TO(22) + D(1)	CNSR1965
1150	C		CNSR1968
1151	C	***CALL 6 TO CNSIR--OLAY 10--RETURN ID 6***	CNSR1969
1152		XMISC(39) = D(6)	CNSR1970
1153		RETURN	CNSR1975
1154	C		CNSR1976
1155	C	***TEST FOR INTERM PT PRINT***	CNSR1977
1156	4570	IF (IPA)4573,4573,4572	
1157	4572	CALL PRTA	CNSR1980
1158	C		CNSR1981
1159	C	***TEST OPT CONDITION IOPT 1= END PT 2= INTERM PT.***	CNSR1982
1160	4573	IF (IOPT - ND(1)) 458,458,463	CNSR1985
1161	458	IF (TO(18) - TO(1)) 459,480,480	CNSR1930
1162	459	IOPI = IOPD(4)	CNSR2000
1163		TO(22) = TO(22) - D(1)	CNSR2005
1164		TO(6) = TO(21)	CNSR2006
1165		GO TO 482	CNSR2010
1166	C		CNSR2020
1167	C	**PT I LESS THAN I-1**	CNSR2030
1168	460	IF (TO(6) - TO(11) - TO(9)) 480,461,462	CNSR2040
1169	C		CNSR2050
1170	C	**LAST VALID POINT**	CNSR2060
1171	461	TO(24) = TO(21)	CNSR2080
1172		TO(21) = TO(6)	CNSR2081
1173		TO(6) = TO(6) - TO(11)	CNSR2082
1174		GO TO 457	CNSR2090
1175	C		CNSR2100
1176	C	**TEST WITH DELTA 1**	CNSR2110
1177	462	IF (TO(6) - TO(10) - TO(9)) 461,453,453	CNSR2120
1178	C		CNSR2130
1179	C	**OPT AT PT(I) OR (I-2)**	CNSR2131
1180	463	IF (TO(23) - TO(1)) 464,480,480	CNSR2140
1181	464	IOPI = IOPD(3)	CNSR2150
1182		TO(22) = TO(22) - D(2)	CNSR2160
1183		TO(6) = TO(24)	CNSR2161
1184		GO TO 482	CNSR2165
1185	C		CNSR2169
1186	C		CNSR2160
1187	C	**EXIT FROM SEARCH. TEST FOR TYPE OF PRINT**	CNSR2170
1188	C	EXIT FROM LAST CALC POINT=OPT. RCD LOC IN IOPI	CNSR2180
1189	480	IF (IPA)799,799,487	
1190	482	IF(IPA)799,799,487	
1191	485	IFN = N	CNSR2295
1192	C		CNSR2300
1193	C	**COMMON READ AND PRINT**	CNSR2310
1194	C	***RCD 1 OF BLOCK = MISC DATA. READ INTO TSC(1-150)***	CNSR2311
1195	C	*RCD 2 OF BLOCK = TWT(1-150)*	CNSR2312
1196	C	*RCD 3 OF BLOCK = TSS(1-100)*	CNSR2313
1197	C	*RCD 4 OF BLOCK = TC(1-340)*	CNSR2314
1198	C	*RCD 5 OF BLOCK = CD(1-400)*	CNSR2315
1199	C		CNSR2319
1200		CALL READMS (1,TSC(1),150,IFN)	CNSR2320
1201		IFN = N + ND(1)	CNSR2324
1202		CALL READMS (1,TWT(1),150,IFN)	CNSR2325
1203		IFN = N + ND(2)	CNSR2329
1204		CALL READMS (1,TSS(1),100,IFN)	CNSR2330
1205		IFN = N + ND(3)	CNSR2334
1206		CALL READMS (1,TC(1),340,IFN)	CNSR2335

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CARD NO  ****                          CONTENTS                          ****
1207            IFN = N + ND(4)                                          CNSR2339
1208            CALL ADUMS (1,CD(1),400,IFN)                             CNSR2340
1209      C                                                              CNSR2344
1210      C          **PROCESS MISC DATA IN TSC(1-150)**                 CNSR2345
1211            DO 486 I=1,5                                             CNSR2346
1212            TD(I) = TSC(I)                                           CNSR2347
1213            TD(I+17) = TSC(I+5)                                      CNSR2348
1214       486  CONTINUE                                                 CNSR2350
1215            D(375) = TSC(11)                                         CNSR2360
1216            D(376) = TSC(12)                                         CNSR2361
1217            D(380) = TSC(13)                                         CNSR2362
1218            D(381) = TSC(14)                                         CNSR2363
1219            D(382) = TSC(15)                                         CNSR2364
1220      C                                                              CNSR2369
1221            DO 4860 I=1,11                                           CNSR2370
1222            TBWP1(I) = TSC(I+15)                                     CNSR2380
1223            TWWP1(I) = TSC(I+26)                                     CNSR2390
1224            WFWP1(I) = TSC(I+37)                                     CNSR2392
1225            WPNLS(I) = TSC(I+48)                                     CNSR2394
1226            TPNLW(I) = TSC(I+59)                                     CNSR2396
1227            TBCWT(I) = TSC(I+70)                                     CNSR2398
1228            DEFF1(I) = TSC(I+81)                                     CNSR2400
1229            YBUD(I) = TSC(I+92)                                      CNSR2402
1230            YBLD(I) = TSC(I+103)                                     CNSR2404
1231            DCBST(I) = TSC(I+114)                                    CNSR2406
1232            DCNOS(I) = TSC(I+125)                                    CNSR2408
1233            DNX1(I) = TSC(I+136)                                     CNSR2410
1234       4860 CONTINUE                                                 CNSR2415
1235      C                                                              CNSR2418
1236      C                                                              CNSR2419
1237      C          **TEST RETURN IOPT=2,3**                            CNSR2420
1238            IF (IOPT - ND(2)) 701,791,4890                           CNSR2430
1239      C                                                              CNSR2440
1240      C          ***PRINT BLOCK IOPD DATA AND OPT. OPT=IOPT+2.***    CNSR2450
1241      C          **PRINT 1,2,3,4 AND OPT=5. IOPT=5**                 CNSR2460
1242      C                                                              CNSR2470
1243      C          **PRINT 1,2,3,5 AND OPT=4. IOPT=4**                 CNSR2480
1244       487  IOPP = ND(1)                                            CNSR2490
1245       488  IOPT = ND(3)                                            CNSR2500
1246       489  N = IOPD(IOPP)+ND(5) + 113                              CNSR2510
1247            GO TO 485                                                CNSR2520
1248      C          RETURN FOR MOVE                                     CNSR2530
1249      C                                                              CNSR2538
1250      C          ***TEST TWT(I) FOR WT--IF 0.0, SKIP PRTA PRINT***   CNSR2539
1251       4890 IF (TWT(1)) 4896,4896,4895                               CNSR2540
1252       4895 CALL PRTA                                                CNSR2545
1253       4896 IOPP = IOPP + ND(1)                                      CNSR2550
1254            IF (ND(4)-IOPP) 4891,4893,488                            CNSR2560
1255       4891 IOPT = ND(2)                                             CNSR2570
1256            IF (IOPT - ND(4)) 4892,4892,489                          CNSR2580
1257       4892 IOPP = ND(4)                                             CNSR2590
1258            GO TO 489                                                CNSR2600
1259       4893 IF (IOPT - ND(4)) 4894,4894,488                          CNSR2610
1260       4894 IOPP = ND(5)                                             CNSR2620
1261            GO TO 488                                                CNSR2630
1262      C                                                              CNSR2640
1263      C                                                              CNSR3310
1264      C          ****TEST FOR PIVOT CALC****                         CNSR3310
1265      C            *IF PIVOT CALC, SAVE TC(1-340) IN TSC(1-340) AND CLEAR* CNSR3311
1266       700  IF (DYPVT) 701,701,7000                                  CNSR3320
1267       7000 DO 7001 I=1,340                                          CNSR3330
1268            TSC(I) = TC(I)                                           CNSR3340
1269            TC(I) = DC(3)                                            CNSR3350
1270       7001 CONTINUE                                                 CNSR3360
1271      C                                                              CNSR3370
1272            CALL PIVOT                                               CNSR3380
1273      C                                                              CNSR3390
1274      C                                                              CNSR3400
1275      C          ***TOTAL WEIGHTS/AV. FOR WING, HORI, VERT***        CNSR3410
1276      C            *(WT)/AV=(WT)/SIDE*2/K*                           CNSR3411
1277      C            *K=1 FOR WING AND HORI.  K=1 OR 2 FOR VERT=FIND OF PNLS* CNSR3412
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CARD NO  ****                          CONTENTS                          ****
 1278    C              *          K=2 FOR 1 PNL, 1 FOR 2 PNLS*                CNSR3N13
 1279    C                                                                     CNSR3N19
 1280     701  DO 7010 I=1,149                                                CNSR3N20
 1281          TWT(I) = TWT(I)*D(2)/WMYID                                     CNSR3N30
 1282     7010 CONTINUE                                                       CNSR3N35
 1283    C                                                                    CNSR3N38
 1284    C            ****SAVE TWT(1-100) IN TEMP LOC TW(701-800)*****        CNSR3N39
 1285          DO 702 I=1,100                                                 CNSR3N40
 1286          TW(I+700) = TWT(I)                                             CNSR3N41
 1287     702  CONTINUE                                                       CNSR3N42
 1288    C                                                                    CNSR3N45
 1289    C                                                                    CNSR3N50
 1290    C       TEST FOR C-SEC WT CALC -- ID IN D(480)<C-SEC WIDTH AT C.L.   CNSR3N60
 1291    C       INTERIM C-SEC SUBR -- 10-14-65 --WIC-SEC)*DELC* WT/IN AT SEC.1CNSR3N70
 1292    C                                                                    CNSR3N80
 1293    C       DO C-SEC.  TEST FOR CALC IN SUBR                             CNSR3N90
 1294     710  CALL CSECW                                                     CNSR3500
 1295    C                                                                    CNSR3510
 1296    C       APPLY DEL(CU, CL, FS, RS) TO C-SEC ELEMENTS WTS              CNSR3520
 1297          DO 711 I=1,2                                                   CNSR3530
 1298          TSS(I+8) = DLCS(1)*TSS(I+8)                                    CNSR3540
 1299          TSS(I+11)=DLCS(4)*TSS(I+11)                                    CNSR3550
 1300          TSS(I+14)=DLCS(3)*TSS(I+14)                                    CNSR3560
 1301          TSS(I+16)=DLCS(7)*TSS(I+16)                                    CNSR3570
 1302     711  CONTINUE                                                       CNSR3580
 1303          TSS(11) = DLCS(1)*TSS(11)                                      CNSR3590
 1304          TSS(14) = DLCS(4)*TSS(14)                                      CNSR3600
 1305    C                                                                    CNSR3610
 1306          IF (TSS(11) 712,714,712                                        CNSR3620
 1307    C                                                                    CNSR3630
 1308    C            ***CSEC WT. DATA PRINT--SAME ID AS PRTA ID***           CNSR3638
 1309    C              *SET N=1 FOR OUTPUT BY PRTH*                          CNSR3639
 1310     712  IF (IPA) 714,714,713                                           CNSR3640
 1311     713  N = ND(1)                                                      CNSR3650
 1312          CALL PRTH                                                      CNSR3660
 1313    C                                                                    CNSR3670
 1314    C            ***TOTAL WING DATA--OPNL + CSEC***                      CNSR3680
 1315    C       W(CSEC) = W(STRU) + W(MISC)                                  CNSR3690
 1316     71*  TWT(43) = TSS(1) + TSS(2)                                      CNSR3700
 1317          TWT(40) = TWT(40) + DELWC*TWT(43)                              CNSR3705
 1318          CD(141) = TWT(43)*WMYID/D(2)                                   CNSR3710
 1319          CD(134) = CD(134) + CD(141)*DELWG                              CNSR3720
 1320    C                                                                    CNSR3727
 1321    C            ***SAVE WT SUMMARIES SWT ARRAY FOR WDATA SUBR***        CNSR3728
 1322    C              *TWT(40-43),(48-52)=11*                               CNSR3729
 1323     720  SWT(1) = TWT(40)                                               CNSR3730
 1324          SWT(2) = TWT(41)                                               CNSR3735
 1325          SWT(3) = DC(3)                                                 CNSR3740
 1326          SWT(4) = TWT(43)                                               CNSR3745
 1327          DO 721 I=1,7                                                   CNSR3750
 1328          SWT(I+4) = TWT(I+45)                                           CNSR3755
 1329     721  CONTINUE                                                       CNSR3760
 1330    C                                                                    CNSR3769
 1331    C       SAVE TOTAL WEIGHT DATA FOR SUMMARY TABLE PRINT -- TYPE D     CNSR3770
 1332    C            **FOR BASIC OPNL, SAVE TWT(1-30),(35-43),(45-53),(67,70)*CNSR3771
 1333    C                                                                    CNSR3780
 1334    C       FOR PIVOT CASE, COMPUTE DELTA WTS AND SETUP FINAL WT TABLE   CNSR3790
 1335    C       PIVOT WTS IN TSS(26-50) DELTA OPNL TWT(1-50) C-SEC TSS(1-25) CNSR3800
 1336    C                                                                    CNSR3810
 1337    C            ***SAVE BASIC WTS ON RCDS 184, 185, 186 FOR GM(1,2,3)SS CNSR3820
 1338    C              *FINAL LOC FOR SUBR PRTD WILL BE CD(400-699)*         CNSR3830
 1339    C                                                                    CNSR3840
 1340     750  DO 753 I=1,50                                                  CNSR3850
 1341          TSS(I+50) = TSS(I)                                             CNSR3855
 1342          IF (I - 30) 751,751,753                                        CNSR3860
 1343     751  TSS(I) = TWT(I)                                                CNSR3870
 1344          IF (I - ND(8)) 752,752,753                                     CNSR3880
 1345     752  TSS(I+30) = TWT(I+34)                                          CNSR3890
 1346          TSS(I+30) = TWT(I+44)                                          CNSR3895
 1347     753  CONTINUE                                                       CNSR3900
 1348          TSS(49) = TWT(67)                                              CNSR3910
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CARD NO	**** CONTENTS ****	
1349	TSS(58) = TWT(70)	CNSR3915
1350	IFN = IGN + 183	CNSR3916
1351	CALL WRITMS (1,TSS(1),100,IFN)	CNSR3917
1352	C	CNSR3919
1353	C CHECK FOR DELTA PIVOT CALC CLEAR TSS,TWT (1-50)	CNSR3920
1354	754 DO 755 I=1,50	CNSR3930
1355	TWT(I) = DC(3)	CNSR3940
1356	TSS(I) = DC(3)	CNSR3950
1357	755 CONTINUE	CNSR3960
1358	C	CNSR3969
1359	IF (DYPVT) 770,770,760	CNSR3970
1360	C	CNSR3980
1361	C DO DELTA WTS	CNSR3990
1362	760 CALL DLPVT	CNSR4000
1363	SWT(3) = TSS(26)	CNSR4005
1364	C	CNSR4010
1365	C RESET TC REGION	CNSR4020
1366	DO 761 I=1,340	CNSR4030
1367	TC(I) = TSC(I)	CNSR4040
1368	761 CONTINUE	CNSR4050
1369	C	CNSR4060
1370	C MOVE DELTA WT SUMMARIES	CNSR4070
1371	C *SAVE ON RCDS 187, 188, 189*	CNSR4080
1372	C *FINAL LOC FOR SUBR PRTD WILL BE CD(000-1099)*	CNSR4090
1373	770 DO 771 I=1,50	CNSR4100
1374	TSS(I+50) = TSS(I)	CNSR4110
1375	TSS(I) = TWT(I)	CNSR4120
1376	771 CONTINUE	CNSR4130
1377	IFN = IGN + 186	CNSR4140
1378	CALL WRITMS (1,TSS(1),100,IFN)	CNSR4150
1379	C	CNSR4159
1380	C ***PIVOT WT, DELTA WT PRINT--SAME ID AS PRTA ID***	CNSR4160
1381	C SET N=2 FOR DATA	CNSR4170
1382	C SET N=2 FOR PRTH PRINT--TEMP---	CNSR4180
1383	780 N = ND(2)	CNSR4190
1384	IF (DYPVT) 783,783,781	CNSR4200
1385	781 IF (IPA) 783,783,782	CNSR4210
1386	782 CALL PRTH	CNSR4220
1387	C	CNSR4230
1388	C **SETUP NODM=1 EXIT. TEST FOR TYPE A PRINT**	CNSR4240
1389	C ***RESET TWT(1-100), TSS(1-100) FROM TW(701-900)***	CNSR4250
1390	783 DO 784 I=1,100	CNSR4260
1391	TWT(I) = TW(I+700)	CNSR4270
1392	TSS(I) = TW(I+800)	CNSR4280
1393	784 CONTINUE	CNSR4290
1394	C	CNSR4299
1395	C **NODM 2-5 EXIT WITH TEST ON BKPRT**	CNSR4300
1396	C *SECT(J) WT DATA IN TSS(1-59) HAS BEE RESET BY CNSTR*	CNSR4310
1397	790 IF (IPA) 799,799,791	CNSR4320
1398	791 CALL PRTA	CNSR4330
1399	C	CNSR4340
1400	C	CNSR9900
1401	C ***EXIT***	CNSR9910
1402	C	CNSR9920
1403	C ***SET RETURN ID TO 7 FOR NORMAL RETURN TO PROG***	CNSR9930
1404	799 XHISC(39) = D(7)	CNSR9940
1405	C	CNSR9950
1406	RETURN	CNSR9990
1407	END	CNSR9999
1408	C**********	
1409	C	
1410	C *****SUBROUTINE PIVOT*****	
1411	C ***PIVOT STRUCTURE SYNTHESIS AND WEIGHT EVALUATION***	
1412	C	
1413	C**********	
1414	C	
1415	C SUBROUTINE PIVOT	00000000
1416	C	00000010
1417	C REVISION---01-21-66 -- CONVERT TO 9A-6I4 FORMAT (STR)	00000012
1418	C 29SEPT65 ORIGINAL	00000014
1419	C	00000018

CARD NO	**** CONTENTS ****	
1420	C CONVERT TO FORT IV MARCH 1972	00000030
1421	SUBROUTINE PLOT	0000040
1422	C	
1423	COMMON TCOM(6220),TW(900)	00000010
1424	COMMON /IPRINT/ IP(80)	
1425	C	00000060
1426	DIMENSION T(2060), D(2060), CD(2000), S(200), PT(100)	00000070
1427	1, ANS(5), TSEC(200), ULTPM(11), ULTPV(11), YSTRC(11)	00000080
1428	7,TOGW(3),DGW(3),ND(100)	PIV00081
1429	8,DMILP(19) , TA40(9),SIND(6), COSD(6)	00000082
1430	C	00000090
1431	EQUIVALENCE (TCOM(1), T(1))	00000100
1432	1, (T(12),B02), (T(38),TANAC), (T(70),FIPTR	00000110
1433	3, (T(77),FIMTR), (T(78),FIMTRS), (T(81),BLEA)	00000130
1434	A, (T(45),CPVT), (T(91),YSTRP), (T(52),CR	00000131
1435	B, (T(140),SIND(1)), (SIND(3),SINEA)	00000132
1436	C, (T(146),COSD(1)), (COSD(3),COSEA)	00000133
1437	4, (T(122),TAND(1))	00000140
1438	6, (T(900),YPVT), (T(901),PT(1)), (T(1001),S(1))	00000160
1439	EQUIVALENCE (DMILP(1),CD(1905))	00000162
1440	1, (DMILP(2),DNU), (DMILP(5),EC), (DMILP(10),FTS)	00000163
1441	2, (DMILP(11),RHO), (DMILP(12),FTU)	00000164
1442	3,(D(190),RATFSU), (D(191),RHOPIN), (DMILP(16),FSU)	
1443	C	00000170
1444	EQUIVALENCE (PT(9),PVTM), (PT(10),PVTD)	00000190
1445	A, (PT(8),PVTV), (PT(100),SPAN	00000191
1446	B, (DXPVT,PT(5)), (PT(2),CKEC), (PT(3),ARM)	00000192
1447	2 , (PT(38),DTH), (PT(39),SINDTH)	00000200
1448	3, (PT(40),COSDTH), (PT(54),E00), (PT(55),DDT)	00000210
1449	4, (PT(56) SOD), (PT(66), OD), (PT(69),EDIST)	00000220
1450	5, (IGH,ND(57)), (NCASE,ND(60)), (NPAGE,ND(85))	PIV00221
1451	6, (TOGW(1),D(80)), (DGW(1),D(1021)), (DPHZ,T(20))	PIV00222
1452	7, (DNNZ,T(21)), (BKPRT,D(1474)), (ND(1),TCOM(6121))	PIV00223
1453	C	00000221
1454	EQUIVALENCE (TCOM(4121),CD(1)), (CD(1501),TSEC(1))	00000222
1455	1, (TSEC(1),ULTPM(1)), (TSEC(12),ULTPV(1)), (TSEC(166),YSTRC(1))	00000223
1456	C	00000224
1457	C MOMENT = ULTPM, SHEER = ULTPV AT STATIONS YSTRC	00000225
1458	C DEPTHS AT TSEC(55 THRU 66)	00000226
1459	C	00000227
1460	C	00000230
1461	EQUIVALENCE (S(95), ANS(1))	00000240
1462	C	00000250
1463	EQUIVALENCE (TCOM(2061),D(1))	00000260
1464	1, (D(124),AC), (D(125),FSLOC), (D(126),KS.OC)	00000270
1465	2, (D(127),EALOC), (D(195),FBR)	00000280
1466	3, (D(198),DDPVT), (D(199),DN), (D(200),DYPVT)	00000290
1467	4, (D(201), XPVT), (D(202),THPTHD), (D(203),THPAFT)	00000300
1468	5, (D(240),WAREA), (D(241),WAR), (D(242),WSHP)	00000310
1469	6, (D(243),WTOC), (D(244),WTR), (D(245),WSIG)	00000320
1470	7, (D(192),CKA), (D(193),CKB), (D(194),CKC)	00000330
1471	8, (D(156),DP1), (D(157),DP2), (D(189),PERTU)	00000340
1472	9, (D(186),DEPTH)	PIV00341
1473	C	00000350
1474	EQUIVALENCE (D(1),D1), (D(2),D2), (D(3),D3), (D(4),D4)	00000360
1475	1, (D(5),D5), (D(6),D6), (D(7),D7), (D(8),D8), (D(9),D9)	00000370
1476	2, (D(10),D10), (D(11),D11), (D(12),D12), (D(15),P1)	00000380
1477	C CLEAR ANSWER LOCATIONS	00001000
1478	9 DO 10 I=1,5	00001010
1479	10 ANS(I)=0.0	00001020
1480	C TEST IF PIVOT CALC. REQUIRED	00001030
1481	IF(DYPVT) 999, 999, 20	00001040
1482	C	00001041
1483	20 IF(DYPVT-D1) 21,22,22	00001050
1484	21 YPVT = DYPVT + B02	00001060
1485	GO TO 25	00001070
1486	22 YPVT = DYPVT	00001080
1487	25 SPAN = D2+B02	00001090
1488	C	00001111
1489	C	00001114
1490	C • • • INITALIZE • • •	00001140

CARD NO **** CONTENTS ****

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          S(55) = 0.0                                                  00001150
          PT(70)= 0.0                                                  00001160
C                EVIDENTLY WAS THE DISTANCE THE PIVOT INBOARD STRUCTURE 00001161
C                            WAS OUT FROM THE CENTER LINE.             00001162
          S(127)= 0.0                                                  00001170
         PT(81)=TAND(1)                                                00001180
C              SWEEP OF THE LEADING EDGE                               00001190
          PT(88) = THPFWD*D(16)                                        00001202
C              = THETA FORWARD IN RADIANS                              00001203
          PT(89) = THPAFT*D(16)                                        00001204
C              = THETA AFT IN RADIANS                                  00001205
            DTH  = PT(89) - PT(88)                                     00001206
C              = DELTA THETA IN RADIANS                                00001207
          S(49)  = 0.0                                                 00001210
          S(50)  = 0.0                                                 00001220
          S(140) = 0.0                                                 00001230
          S(141) = 0.0                                                 00001240
          PT(76) = 0.0                                                 00001250
          PT(77) = 0.0                                                 00001260
          PT(1) =  ( B02  - YPVT) /COSCA                               00001300
C             =DISTANCE ALONG ELASTIC AXIS FROM PIVOT TO TIP           00001310
        DXPVT = XPVT                                                   00001346
        IF ((XPVT .GT. D(1))   DXPVT = DXPVT / CPVT                    00001347
        PT(4  BLEA-YSTRP                                               00001350
C       TIP TO PIVOT CENTER ON E.A.                                    00001360
C                             DETERMINE PROPER MOMENT                  00001370
          I=11                                                         00001380
     30       IF(YSTRC(I) - YSTRP)       31, 33, 35                    00001390
     31           I=I-1                                                00001400
              GO TO 30                                                 00001410
     33  PVTM = ULTPM(I)                                               00001420
         PVTV = ULTPV(I)                                               00001430
                                  GO TO 37                             00001430
C                                                                      00001440
     35  PVTM = ULTPM(I) + ULTPV(I)*(YSTRC(I)-YSTRP)                   00001490
C            = MOMENT AT POINT WHERE PERPENDICULAR FROM PVT CROSSES E.A. 00001500
              IF(I .EQ. 11)       I=10                                 00001501
         PVTV = ULTPV(I)-(ULTPV(I)-ULTPV(I-1))*((YSTRC(I)-YSTRP)/      0C001502
      1                                      (YSTRC(I)-YSTRC(I-1)))    00001503
C            = SHEER AT PIVOT POINT ON E.A. INTERPOLATED OR EXTRAPOLATED 00001504
     37  PVTC = CR*AC*WTOC * ( PT(4)/BLEA * FIMIRS + WTR*WSIG )        00001510
C            = PIVOT DEPTH                                             00001515
        DSAVE = PVTD                                                   PIVO1516
        IF (DEPTH - D(1)) 39,39,38                                     PIVO1517
     38 PVTD = DEPTH                                                   PIVO1518
     39 CONTINUE                                                       PIVO1519
C                                                                      00001520
C          CALCULATE GEOMETRY FOR ROTATION                             00001530
C                                                                      00001540
        PT(30)=TAND(4)                                                 00001550
C              =  TANGENT OF SWEEP OF REAR SPAR                        00001560
         PT(31) = (RSLOC-DXPVT)*CPVT  - YPVT*PT(30)                    00001570
         PT(42) = PT(31) + PT(70)*PT(30)                               00001580
         PT(32) = SQRT((YPVT-PT(70))**2 + PT(42)**2)                   00001590
         PT(33) = (YPVT-PT(70)) / PT(32)                               00001600
         PT(34) = PT(42)/PT(32)                                        00001610
        PT(35)=COSD(4)                                                 00001620
C              = COSINE OF SWEEP OF REAR SPAR                          00001630
        PT(36)=SIND(4)                                                 00001640
C              = SINE OF SWEEP OF REAR SPAR                            00001650
         PT(37) = PT(36)*PT(33) + PT(35)*PT(34)                        00001660
         SINDTH = SIN(DTH)                                             00001690
         COSDTH = COS(DTH)                                             00001700
         PT(43) = PT(32)                                               00001710
         PT(45) = PT(32)                                               00001720
C                                                                      00001730
C          CALCULATE RMAX                                              00001740
C                                                                      00001750
     50  PT(46) = (YPVT-PT(70)) / PT(45)                               00001800
         PT(47) = SQRT(D(1)-PT(46)**2)                                 00001810
         PT(48) = PT(47)*PT(33) - PT(46)*PT(34)                        00001820
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CARD NO   ****                    CONTENTS                              ****
          PT(49) = PT(56)*PT(33) + PT(47)*PT(34)                        00001830
          PT(50) = SINDTH*PT(49) + COSDTH*PT(48)                        00001840
          PT(51) = COSDTH*PT(49) - SINDTH*PT(48)                        00001850
          PT(52) = (PT(50)/PT(37))**2                                   00001860
          PT(45) = PT(32)*(PT(51)-SQRT(PT(52)-PT(50)**2))/(D(1)-PT(52)) 00001870
          PT(53) = PT(45)/PT(32)                                        00001880
C                                                                       00001890
         IF(PT(53).LE.D(1))               GO TO 60                      00001900
   55 IF( (PT(45)-PT(43)).LE. .00001 ) GO TO 60                         00001910
   57  PT(43) = PT(45)                                                  00001920
                                          GO TO 50                      00001930
C                                                                       00001940
   60     DO 61 I=1,4                                                   00001950
   61        PT(59+I)=D(I)                                              00001960
          EOD = DP1                                                     00001970
          DOT = DP2                                                     00001980
        PT(67) = PCFG TU*FTU                                            00001990
C                                                                       00002000
   70 IF (DEPIH ) 71,71,72                                              PIV02010
   71 ARM = PVTD -PT(60)-PT(61) D(19)*(PT(62)+PT(63))                   PIV02011
      GO TO 73                                                          PIV02012
   72 ARM = PVTD  D(19)*(PT(62)+PT(63))                                 PIV02013
   73 PT(64) = PVTH / ARM                                               PIV02014
C     ** CHECKING SHEAR TEAROUT OF LUGS BASED ON ASSUMED D/T AND E/D    00002015
      DD = SQRT (PT(64)/FSU*DOT/ (D(2)*EOD D(1)) )                      00002016
C                                                                       00002030
      IF( DDPVT.GT. 0.0)                  GO TO 74                      00002040
       PT(65) = FBR                                                     00002050
C     ** CHECKING THE REQUIRED BEARING STRESS                           00002055
          SDD = SQRT(DOT*PT(64)/ PT(65))                                00002060
      IF ( DD.LT. SDD )  DD SDD                                         00002070
                                          GO TO 80                      00002080
   74 IF ( DD .LT. DDPVT) DD DDPVT                                      00002090
       PT(65) = DOT/DD*PT(64)/DD                                        00002100
C     ** CHECKING PIN SHEAR AND GETTING ID OF PIN                       00002009
   80 S(121) =       D(4)/D(15)*PT(64 )/(RATFSU*FSU)                    00002010
C                                                                       00002120
      IF(S(121) .LT. 0.0 )  S(121) = 0.0                                00002130
       PT(68) = SQRT(S(121))                                            00002140
       EDIST  = EOD * DD                                                00002150
C                                                                       
      IF(PT(53) D(1) )                    88, 88, 86                    00002160
   86  PT(70) = YPVT - PT(45)*PT(56)                                    00002170
                                          GO TO 90                      00002180
   88  PT(70) = YPVT   PT(45)*PT(33)                                    00002190
C                                                                       00002200
   90 IF ( (YPVT  EDIST   PT(70)) .LT. 0.0 ) PT(70)=YPVT-EDIST D(19)    00002210
  100  PT(71)   F     + ( )VT PT(70))/COSEA                             00002220
C                                                                       00002230
C                        MOMENT AT RIB (NET)*                           00002240
C                                                                       00002250
       PT(75) = PVTH + PVTV*(PT(71)   PT(51))                           00002260
C              = MOMENT AT PT(71)     INBOARD EDGE OF LUG               00002265
       PT(78) = AC* CR*H(OC*PT(71))*BLEA*FIMIRS + WIR*WSIG)             00002270
      PT(78) = P  78)+PVTD/D AM                                         PIV02271
C              = LRIB                                                   00002280
       PT(79) = PT(78)   PT(76)  PT(77)                                 00002290
C              = RHO A RIB                                              00002300
       PT(80) = (RSLOC FSLOC)* CR*(PT(71))/BLEA*FIMIR + WIR)            00002310
C              = WRIB                                                   00002320
       PT(82) = (D1/((D4*PT(81)/P1)**2+D1))*COS(D2/D3 * PT(81))         00002350
       PT(83) = 0.0                                                     00002360
       PT(84) = 0.0                                                     00002370
       PT(85) = DTH/DN                                                  00002380
       PT(93) = PT(83)/PT(79)                                           00002390
       PT(94) = CKA/(PT(93)+CKB)**2 + CKC                               00002400
C              = KRIB                                                   00002410
  104  PT(86) = (D1/((D4*PT(84)/P1)**2+D1))*COS(D2/D3 * PT(84))         00002420
       PT(87) = PT(75)/PT(82)*PT(86)                                    00002430
       PT(92) = SIN(PT(88)+PT(84))                                      00002440
       CHEC = PT(87)/ EC*PT(92)/PT(94)*PT(79)/PT(L3)                    00002445
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CARD NO  ****                                CONTENTS                                ****
  1633          IF (CKEC) 105,105,300
  1634        105 WRITE (6,106)
  1635        106 FORMAT ( 43H1 ERROR IN PIVOT, RIB THICKNESS IS NEGATIVE  //
  1636           *  9H   T DUMP  // )
  1637          GO TO 705
  1638        300 PT(96)=CKEC**D(21)                                              00002450
  1639          C            PT(96) IS RIB THICKNESS                              00002451
  1640          C                                                                 00002460
  1641          IF ( PT(96) .GT. PT(83) )  PT(83) = PT(96)                        00002470
  1642          C                                                                 00002480
  1643          PT(84) = PT(84)+PT(85)                                            00002490
  1644          C                                                                 00002500
  1645          IF((PT(88)+PT(84)) .LE. PT(89))  GO TO 104                        00002510
  1646          C                                                                 00002520
  1647        110 PT(98) = YPVT - PT(70)                                          00002530
  1648          PT(99) = (RSLOC - D(2)*YPVT)* CR                                  00002540
  1649           S(1)  = PT(99)*((SPAN- D(2)*YPVT)/SPAN*(TMTR* WTR)               00002550
  1650          S(1) = S(1)-PT(93)*PT(33)                                         00002560
  1651          S(2) = CR *((SPAN-D(2)*PT(70))/SPAN*(TMTR*WTR)-S(1)               00002570
  1652          S(2) = (S(2)+S(1))*(RSLOC-FSLOC)-S(1)                             00002580
  1653          S(3) = SQRT(S(1)**2 + PT(93)**2)                                  00002590
  1654          S(4) = SQRT(S(2)**2 + PT(98)**2)                                  00002600
  1655          S(5) = SQRT(S(3)**2 - EDIST**2 )                                  00002610
  1656          S(6) = SQRT(S(4)**2 - EDIST**2 )                                  00002620
  1657          S(7) = PT(38)*S(6) + S(2)*EDIST                                   00002630
  1658          S(8) = PT(90)*EDIST - S(6)*S(2)                                   00002640
  1659          S(9) = S(7)/S(8)                                                  00002650
  1660          S(123) = ATAN2(S(7),S(8))                                         00002660
  1661          S(10) = EDIST*S(1) + PT(98)*S(5)                                  00002670
  1662          C
  1663          IF(S(10))800,800,810
  1664        800 WRITE(6,805)
  1665        805 FORMAT(1H1, 78H S(10)=0.0 AT LINE 2670 IN SUBROUTINE PIVOT WHICH W
  1666           *ILL GIVE /0.0 AT LINE 2760. /  38H CHANGE THE INPUT DATA IN LOCATI
  1667           *ON 201//////)
  1668          GO TO 705
  1669        810 CONTINUE
  1670          C
  1671          S(11) = PT(98)*EDIST - S(1)*S(5)                                  00002680
  1672          S(12) = S(10)/S(11)                                               00002690
  1673          S(124) = ATAN2(S(10),S(11))                                       00002700
  1674          S(14) = D(2)*D(15)-S(123)-S(124)                                  00002710
  1675          S(15) = EDIST*(S(5)+S(6)+S(14)*EDIST)                             00002720
  1676          S(16) = D(19)*((S(1)+S(2))*PT(90)+S(15))-D(15)/D(4)*OD**2         00002730
  1677          C              S(16)IS INBOARD AREA                               00002735
  1678          S(17) = S(2) - OD/D(2) + PT(98)/S(9)                              00002740
  1679          C
  1680          IF(S(17) .LT. 0.0)  S(17)= EDIST-OD/D(2)                          00002750
  1681          S(18) = S(1)-OD/D(2)+PT(98)/S(12)                                 00002760
  1682          C
  1683          IF(S(18) .LT. 0.0)  S(18)= EDIST-OD/D(2)                          00002770
  1684          S(19) = S(17) + S(18)                                             00002780
  1685          C
  1686          IF(S(17) - S(18))              130,130,132                        00002790
  1687        130 S(20) = S(17)                                                   00002800
  1688                                         GO TO 134                          00002810
  1689        132 S(20) = S(18)                                                   00002820
  1690        134 S(21) = PT(98)                                                  00002830
  1691           S(22)= (PT(60)+PT(61))/D(2)                                      PIVO2840
  1692           IF ( DEPTH .GE. D(1)) GO TO 135                                  PIVO2841
  1693           S(22)= -S(22)                                                    PIVO2842
  1694        135 S(22)= PVTD + S(22)                                             PIVO2843
  1695          S(23) = PVTM                                                      00002850
  1696          C              S(19) THRU S(23) INPUT FOR TEE AND TEL             00002860
  1697          CALL TEE( PT(60), S(142))                                         00002870
  1698          CALL TEL( PT(61), S(143))                                         00002880
  1699          C                                                                 00002890
  1700          S(20) = S(1)+S(2)                                                 00002900
  1701          S(19) = S(21)                                                     00002910
  1702          S(22)= (PT(76)+PT(77))/D(2)                                       PIVO2920
  1703          IF (DEPTH .GE. D(1))  GO TO 140                                   PIVO2921
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CARD NO **** CONTENTS ****

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      S(22) = -S(22)                                               PIVO2922
  140 S(22) = PI(78)+S(22)                                         PIVO2923
       S(23) = PT(75)                                              00002930
C                                                                  00002940
      CALL TEE( PT(76), S(144))                                    00002950
      CALL TEE( PT(77), S(145))                                    00002960
C                                            OUT HERE SECOND TIME  00002970
      IF (S(140) .GT. 0.0)          GO TO 200                      00002980
C                                                                  00002990
       S(24) = SQRT(PT(45)**2+PT(32)**2-D(2)*P  (5)*PT(32)*PT(51) )  00003000
       S(25) = S(24)*PT(35)                                        00003010
C                                                                  00003020
      IF( (S(25)-YPVT-EDIST) .GE. 0.0) GO TO 200                   00003030
C                                                                  00003040
       S(28) = (RSLOC DXPVT)*CR*(D(1)) - D(2)*YPVT/SPAN*FIMTR )    00003050
       S(29) = S(28) + EDIST*PT(30)                                00003060
       S(122)= SQRT(S(29)**2 + EDIST**2 )                          00003070
       S(129)= ATAN2(S(29), EDIST)                                 00003080
       S(130)= ATAN2(PT(31),YPVT)                                  00003090
       S(131)= D(2)*D(15) - DTH - S(129) - S(130)                  00003100
       S(132)= SIN(S(131))                                         00003110
       S(133)= COS(S(131))                                         00003120
       S(134)= PT(34)*S(133) + PT(33)*S(132)                       00003130
       S(135)= PT(33)*S(133) - PT(34)*S(132)                       00003140
       S(136)= PT(36)*S(135) + PT(35)*S(134)                       00003150
       S(137)= (SINDTH/S(136))**2                                  00003160
       S(138)= S(122)*(COSDTH SQRT(COSDTH**2-(D(1)-S(137))))       00003170
C                                                                  00003180
      IF(S(138) - S(122))           160, 164, 164                  00003190
C                                                                  00003200
  160  S(139) = S(138)                                             00003210
                                    GO TO 170                      00003220
  164  S(139) = S(122)                                             00003230
  170  PT(98) = S(139)*S(135)                                      00003240
C                                                                  00003250
      IF(PT(98) .LT. EDIST )    PT(98) = EDIST                     00003260
                                                                   00003270
      PT(70) = YPVT - PT(98)                                       00003280
      S(140) = D(1)                                                00003290
      S(25)  = EDIST + YPVT                                        00003300
                                    GO TO 100                      00003310
C                                                                  00003320
C                                                                  00003330
  200  S(140) = 0.0                                                00003340
      S(26)  = (RSLOC   FSLOC)* CR                                 00003350
      S(27)  = S(26)*( (D(1)   D(2)*S(25))/SPAN) + FIMTR + WTR )   00003360
      S(28)  = (RSLOC DXPVT)*CR * (D(1) D(2)*YPVT/SPAN * FIMTR )   00003370
      S(29)  = S(28) + (S(25) YPVT)*PT(30)                         00003380
      S(30)  = S(27)   S(29)                                       00003390
      S(35)  = S(25)   YPVT                                        00003400
      S(31)  = SQRT(S(30)**2 + S(35)**2)                           00003410
      S(120) = SQRT(S(29)**2 + S(35)**2)                           00003420
      S(32)  = SQRT(S(31)**2   EDIST**2)                           00003430
      S(33)  = SQR (S(120)**2   EDIST**2)                          00003440
      S(34)  = S(35)*S(32) + S(30)*EDIST                           00003450
      S(36)  = EDIST*S(35)   S(32)*S(30)                           00003460
      S(37)  = S(34)/S(36)                                         00003470
      S(125) = ATAN2(S(34),S(36))                                  00003480
      S(38)  = EDIST*S(29) +S(33)*S(35)                            00003490
      S(39)  = EDIST*S(35) -S(33)*S(29)                            00003500
      S(40)  = S(38)/S(39)                                         00003510
      S(126) = ATAN2(S(38),S(39))                                  00003520
      S(42)  = D(2)*D(15) - S(125) - S(126)                        00003530
      S(43)  = EDIST*(S(33) + S(32) + S(42)*EDIST )                00003540
      S(44)  = (S(35)*S(27)+S(43))/D(2) -D(        )*OD**2         00003550
C                 S(44)IS OUTBOARD AREA                            00003555
      S(45)  = S(30) - OD/D(2) + S(35)/S(37)                       00003560
C                                                                  00003570
      IF(S(45) .LT. 0.0)                  S(45)= EDIST-OD/D(2)     00003580
C                                                                  00003590
      S(46)  = S(29) - OD/D(2) + S(35)/S(40)                       00003600
```

```
CARD NO   ****                       CONTENTS                          ****
          C                                                            00003610
                IF(S(46) .LT. 0.0)           S(46) = EDIST-DD/D(2)    00003620
          C                                                            00003630
                 S(19)  =  S(45) + S(46)                               00003640
          C                                                            00003650
                 F(S(45) - S(46))            220, 220, 222             00003660
            220  S(20)  = S(45)                                        00003670
                                             GO TO 224                 00003680
            222  S(20)  = S(46)                                        00003690
            224  S(21)  = S(35)                                        00003700
               S(22) =(PT(62)+PT(63))/D(2)                             PIVO3710
               IF (DEPTH .GE. D(1)) GO TO 226                          PIVO3711
               S(22) = S(22) +PT(60)+PT(61)                            PIVO3712
            226 S(22) = PVTD -S(22)                                    PIVO3713
                S(23)  = PVTH                                          00003720
          C                                                            00003730
               CALL TEE( PT(62),  S(146))                              00003740
               CALL TEL( PT(63),  S(147))                              00003750
          C                                                            00003760
                S(20)  = S(29)+S(30)                                   00003770
                S(47)  = AC*CR*WTOC*(D(1) - D(2)*S(25)/SPAN*FIMTRS)    00003780
                S(48)  = S(47) - (S(49)+S(50))/D(2)                    00003790
                S(22)  = S(48)                                         00003800
                S(19)  = S(20)                                         00003810
                S(51)  = BLEA - S(25)/COSEA                            00003820
                S(23)  = PVTH + PVIV*(S(51) - PT(4))                   00003830
          C             = MOMENT AT  S(51) --- OUTBOARD EDGE OF LUG    00003840
          C                                                            00003850
               CALL TEE( S(49), S(148) )                               00003860
               CALL TEL( S(50), S(149) )                               00003870
          C                                                            00003880
               IF(DDPVT)                     240,240, 250              00003890
           240  S(54)  = ABS(DD - S(55))                               00003900
          C
          C      COMPAIR WITH PREVIOUS TIME AROUND                     00003910
               IF(S(54)-.001)                500,500, 246              00003920
          C                                                            00003930
           246  S(55)  = DD                                            00003940
                                             GO TO 70                  00003950
           250  S(120) = ABS(PT(65) - S(127))                          00003960
          C                                                            00003970
               IF(S(128) - 100.)             500,500, 252              00003980
          C                                                            00003990
           252  S(127) = PT(65)                                        00004000
                                             GO TO 70                  00004010
          C     ***********************************************************   00004020
           500  S(95)  = S(16)*RHO*(PT(60)+PT(61)+PT(76)+PT(77))       00004030
          C              S(95) IS INBOARD STRUCT WT.                   00004040
                S(96)  = S(44)*RHO*(PT(62)+PT(63)+S(49)+S(50))         00004050
          C              S(96) IS OUTBOARD STRUCT WT                   00004060
              S(97) = RHO*D(15)/D(2)*(DD**2-PT(68)**2) *PVTD*RHOPIN    00004070
          C              S(97) IS PIN WT.                              00004080
                S(98)  = D(2)*PT(83)*PT(80)*(PT(78)-PT(76)-PT(77))*RHO 00004090
          C              S(98) IS BIB WT.                              00004100
                S(99)  = S(51)                                         00004110
          C             = DISTANCE FROM OUTBOARD EDGE OF PIVOT TO TIP E.A.   00004115
          C                                                            00004120
              IF(IP(26))5001,5001,5002
          5001 NK= IGW                                                 PIVO4121
              WRITE (6,570) NCASE, TOGW(NK),DGW(NK),DPNZ,DNNZ          PIVO4123
           570 FORMAT(1H1,89X,20H** PIVOT - IP(26) **/
             1        1H ,5H CASE, I4,5X, 5HTOGW=, F9.1,2X, 4HDGW=, F9.1,      PIVO4124
             15X, 4H+NZ=, F6.3,2X, 4H-NZ=, F6.3)                       PIVO4126
              WIND =S( 1)+S( 2)                                        PIVO4128
              WOUT = S(29) + S(30)                                     PIVO4130
              WRITE (6,580) S(25),YPVT, S(49), PT(62), S(50), PT(63), WOUT,    PIVO4135
             1S(44), YPVT, PT(70), PT(60), PT(76), PT(61), PT(77), WIND, S(16)  PIVO4140
           580 FORMAT (1H0,15X , 8HOUTBD BP, 3X,7HINBD BP,3X,8HTU OUTBD,3X,    PIVO4141
             17HTU INBD,3X,8HTL OUTBD,3X, 7HTL INBD, 3X, 12HSPLICE CHORD,6X,   PIVO4142
             24HAREA//13H    OUTER LUG, 1X, 2F10.2,F11.4,F10.4,F11.4,F10.4,    PIVO4143
             3F12.2,F10.0/13H     INBD LUG,1X,2F10.2,F11.4,F10.4,F11.4,F10.4,  PIVO4144
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CARD NO **** CONTENTS ****

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     4F12.2,F10.0)                                                    PIVO4145
      WRITE (6,590) PT(80), PT(78), PT(83), PT(70),EDIST, EOD, OD, DOT, PIVO4150
     1PT(68), PVID, ARM, PVTH, PVTV, S(23), PT(75), DXPVT             PIVO4151
  590 FORMAT (1H0,5X,12H RIB WIDTH =,F10.2, 12H RIB DEPTH =,F10.2,    PIVO4152
     112H    RIB T =, F10.4, 12H  RIB B.P. =, F10.2//17H     EDGE DIS(PIVO4153
     2. =, F10.2,3X, 5HE/D =, F10.2, 3X, 10HPIN O.D. =,F6.2 ,3X       PIVO4154
     3 5HD/T =, F6.2, 3X,10HPIN I.D. =,F10.2//17H     PIVOT           PIVO4155
     4F10.2,3X,12HCOUPLE ARM =, F10.2,3X,10HPIVOT MX =,E13.5,3X,      PIVO4156
     510HPIVOT SZ =,E13.5 //1H  ,4X,10HMX OUTBD =, E13.5 , 3X,        PIVO4157
     6 9HMX INBD = , E13.5 / 5X, 7HDXPVT =, E13.5 )                   PIVO4158
C
  505 WRITE (6,704)                                                   PIVO4160
  704  FORMAT (1H1, 5X, 15HT  AT END PIVOT //)
C
  705  DO 710 I=881,1200,5
      IF(ABS(T(I)) + ABS(T(I+1)) + ABS(T(I+2)) + ABS(T(I+3))
     *    + ABS(T(I+4)))710,710,708
  708 WRITE(6,709)I,T(I),T(I+1),T(I+2),T(I+3),T(I+4)
  709  FORMAT ( I17, 5E18.7 )
  710 CONTINUE
 5002 CONTINUE
C
  999  CONTINUE
      RETURN
      END                                                             00004140
C*********************************************************************
C
C        *****SUBROUTINE TEE*****
C   ***PIVOT DESIGN/SYNTHESIS DATA EVALUATION***
C
C*********************************************************************
C
C                                SUBROUTINE  TEE                      5000
C                                USED BY PIVOT                        5010
C                                                                     5020
C      ORIGINAL 4 OCT 65                                              5030
C      REVISED --01-21 E -- CONVERT TO  NAGIN FORMAT--STR --          5040
C      CHANGED  FOR  360 FORTRAN IV    MARCH 72                       5060
C                                                                     5070
C      USE  COMMON AND EQUIVALENCE FROM PIVOT 3 72                    5080
C                                                                     5090
C                                                                     5100
      SUBROUTINE TEE(ITI,TIX)                                         5110
C                                                                     5120
      COMMON    TCOM(6720),TH(900)                                    00000050
C                                                                     00000060
      DIMENSION  T(2060),  D(2060),  CD(2060),  S(200)  PT(100)       00000070
     1,  ANS(5),  TSEC(200), ULTPM(11),  ULTPV(11),  YSTRC(11)        00000080
     7,TOGH(3),DGH(3),ND(100),PD TE(2)                                PIVO0081
     8, OMTLP(17),  TAND(9),SIND(6),  COSD(6)                         00000082
C                                                                     00000090
      EQUIVALENCE        (TCOM(1), T(1))                              00000100
     1, (T(12),BO2),      (T(38),TANAC),     (T(70),FIPTR)            00000110
     3, (T(77),FIMTR),    (T(78),FIMTRS),    (T(81),BLEA)             00000130
     A, (T(45),CPVT),     (T(41),YSTRP),     (T(52),CR)               00000131
     B, (T(140),SIND(1)),  (SIND(3),SINEA)                            00000132
     C, (T(146),COSD(1)),  (COSD(3),COSEA)                            00000137
     4, (T(122),TAND(1))                                              00000140
     6, (T(900),YPVT),    (T(901),PT(1)),    (T(1001),S(1))           00000160
      EQUIVALENCE  ( OMTLP(1),CD(1905)),                              00000162
     1  (OMTLP(2),DMU),    (OMTLP(5),EC),     (OMTLP(10),FTS)         00000163
     2, (OMTLP(11),RHO),   (OMTLP(12),FTU)                            00000164
C                                                                     00000170
      EQUIVALENCE          (PT( 9),PVTH),     (PT(10),PVTD)           00000190
     A, (PT(18),PVTV),     (PT(100),SPAN)                             00000191
     B,    (DXPVT,PT(5))                                              00000192
     2                .    (PT(38),DTH),      (PT(39),SINDTH)         00000200
     3,   (PT(40),COSDTH),  (PT(94),EOD),     (PT(95),DOT)            00000210
     4,   (PT(56),SOD),    (PT(66), OD),      (PT(69),EDIST)          00000220
     5,   (IGM,ND(57)),   (NCASE,ND(60)),  (NPAGE,ND(85))             PIVO0221
     6,   (TOGH(1),D(80)), (DGH(1),D(102)), (DPNZ,T(20))              PIVO0222
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CARD NO  ****                         CONTENTS                              ****
              7.  (DNN2,T(2)),    (BXPRT,D(47)), (D(1),TCOM(612))         PIVO0223
              7.  (PDATE(1),D(2055))                                      PIVO0224
         C                                                                00000221
               EQUIVALENCE        (TCOM(412),CD(1)),  (CD(150)),TSEC(1))  00000222
              1. (TSEC(1),ULTPM(1)),  (TSEC(12),ULTPV(1)), (TSEC(166),YSTRC(1)) 00000223
         C                                                                00000224
         C MOMENT = ULTPM,  SHEER = ULTPV  AT STATIONS YSTRC               00000225
         C  DEPTHS AT TSEC(55 THRU 66)                                    00000226
         C                                                                00000227
         C                                                                00000230
               EQUIVALENCE  (S(95), ANS(1))                               00000240
         C                                                                00000250
               EQUIVALENCE        (TCOM(2061),D(1))                       00000260
              1.   (D(124),AC),      (D(125),FSLOC),     (D(126),RALOC)   00000270
              2.   (D(127),EALOC),                       (D(195),FBR)     00000280
              3.   (D(198),00PVT),   (D(199),DXI),       (D(200),DYPVT)   00000290
              4.   (D(201), XPVT),   (D(202),THPTXO),    (D(203),THPAFT)  00000300
              5.   (D(240),HAREA),   (D(241),HAR),       (D(242),HSWP)    00000310
              6.   (D(243),HTOC),    (D(244),HTR),       (D(245),HTC)     00000320
              7.   (D(192),CKA),   (D(193),CKB),         (D(194),CKC)     00000330
              8.   (D(156),DP1),     (D(157),DP2),     (D(109),HUFTU)     00000340
              9.   (D(.86),DEPTH)                                         PIVO0341
         C                                                                00000350
         C                                                                00000340
                S(56) = CKA/(S(21)/S(20)+CKB)**2 + CKC                        5500
                S(57) = 0.0                                                   5510
                S(58) = 0.0                                                   5520
                S(60) = (PT(89)-PT(88)) / DN                                  5530
         C                                                                    5540
             88 S(61) = (D(1)/((D(4)*S(58)/D(15))**2+D(1))*CO/(D(2)*.D(4)/D(3))  5560
              1        *S(23)/PT(02)                                          5570
                S(62) = PT(88)+S(58)                                          5580
                S(64) = SIN(S(62))                                            5590
                S(65) = COS(S(62))                                            5600
                S(66) = S(61)*S(64)/S(22)                                     5610
                S(67) = S(61)*ABS(S(65))/S(22)                                5620
                S(68) = S(66)/S(56)*S(20 / EC                                 5630
                S(69) = S(68)*SQRT(S(68))                                     5640
               S(70)=D(12)/EC*(1.0-OMU*OMU)/S(19)*S(67)*(S(21)/D(15))**2  00005650
         C                                                                    5660
         C                     FIRST APPROXIMATION                            5670
         C                                                                    5680
                S(73) = S(70)                                                 5690
                S(13) = 0.0                                                   5700
             69 S(71) = SQRT(S(73))                                           5710
                S(72) = S(71)*(S(73)-S(70)) - S(69)                           5720
                S(155)= (D(3)*S(73)-S(70))/(D(2)*S(71))                       5730
                S(156)= (D(3)+S(70)/S(73))/(D(4)*S(71))                       5740
                S(157)= S(72)/(S(155)-S(72)/D(2)*S(156)/S(155))               5750
                S(73) = S(73)-S(157)                                          5760
                S(13) = S(13) + D(1)                                          5770
         C                                                                    5780
               IF(S(13)-D(10))               70,70,71                         5790
         C                                                                    5800
             70 IF(ABS(S(157))-.00001)       71,71,69                         5810
         C                                                                    5820
             71  S(74) = S(73)**D(21)                                         5830
         C                                                                    5840
                IF(S(74)-S(57))              73,73,72                         5850
         C                                                                    5860
             72  S(57) = S(74)                                                5870
                 TTX   = (PT(88)+S(58))/D(16)                                 5880
             73  S(58) = S(58)+S(60)                                          5890
                 S(75) = S(58)+PT(88)                                         5900
         C                                                                    5910
               IF(PT(88)-S(75))              75,68,68                         5920
         C                                                                    5930
             75  TTT   = S(57)                                                5940
             99  RETURN                                                       5950
                END                                                           5960
         C**********************************************************************
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CARD NO  ****                          CONTENTS                          ****
1988     C
1989     C        *****SUBROUTINE TEL*****
1990     C   ***PIVOT DESIGN SYNTHESIS DATA EVALUATION***
1991     C
1992     C**************************************************************************
1993     C
1994     C                              SUBROUTINE TEL                              6000
1995     C                              USED BY PIVOT                           00006005
1996     C                                                                          6010
1997     C   ORIGINAL      50CT65                                                  6020
1998     C   REVISION      1-21-66     CONVERT FOR NA-614  STR.                    6030
1999     C   REVISION       MARCH72    CHANGE  TO FORTRAN IV                       6040
2000     C
2001           SUBROUTINE  TEL(TE TX)                                             6050
2002     C
2003           COMMON    TCOM(220),TH(900)                                     00000050
2004     C                                                                      00000060
2005           DIMENSION  T(2060),   D(2060),  CD(2000),  S(200),  PT(100)     00000070
2006          1,  ANS(5),  TSEC(200), ULTPH(11), ULTPV(11),  YSTRC(11)         00000080
2007          7,TOGW(3),DGW(3),ND(100),FDATE(2)                                PIV00081
2008          8 ,DMTLP(17), TAND(9),SIND(6), COSO(6)                           00000082
2009     C                                                                      00000090
2010           EQUIVALENCE           (TCOM(1), T(1))                           00000100
2011          1, (T(12),B02),         (T(38),TANAC),      (T(70),FIPTR)        00000110
2012          3, (T(77),FIMTR),       (T(78),FIMTRS),     (T(81),BLEA)         00000130
2013          A, (T(45),CPVT),        (T(41),YSTRP),      (T(52),CR)           00000131
2014          B, (T(140),SINO(1)),    (SINO(3),SINCA)                          00000132
2015          C, (T(146),COSO(1)),    (COSO(3),COSCA)                          00000133
2016          4, (T(122),TAND(1))                                              00000140
2017          6, (T(900),YPVT),       (T(901),PT(1)),     (T(1001),S(1))       00000160
2018           EQUIVALENCE  ( DMTLP(1),CD(1905)),                              00000162
2019          1  (DMTLP(2),DMU),      (DMTLP(5),EC),      (DMTLP(10),FTS)      00000163
2020          2, (DMTLP(11),RHO),     (DMTLP(12),FTU)                          00000164
2021     C                                                                      00000170
2022           EQUIVALENCE           (PT( 9),PVTH),      (PT(10),VTD)         00000190
2023          A, (PT(8),PVTV),        (PT(100),SPAN)                           00000191
2024          B,    (DKPVT,PT(5))                                              00000192
2025          2                .     (PT(38),DTH),       (PT(39),SINDTH)      00000200
2026          3,   (PT(40),COSDTH),   (PT(54),EOD),       (PT(55),DOT)         00000210
2027          4,   (PT(56),SOD),      (PT(66), OD),       (PT(69),EDIST)       00000220
2028          5,   (IGW,ND(57)),     (NCASE,ND(60)),    (NPAGE,ND(85))         PIV00221
2029          6,   (TOG(1),D(80)), (DGW(1),D(102)),   (DPN2,T(20))             PIV00222
2030          7,   (DPN2,T(21)),     (BKPRT,D(474)),  (ND(1),TCOM(6121))       PIV00223
2031          7,   (FDATE(1),D(2055))                                          PIV00224
2032     C                                                                      00000221
2033           EQUIVALENCE            (TCOM(121),CD(1)),  (CD(1501),TSEC(1))   00000222
2034          1, (TSEC(1) ULTPH(1)),  (TSEC(12),ULTPV(1)), (TSEC(166),YS RC(1)) 00000223
2035     C                                                                      00000224
2036     C  MOMENT = ULTPH,  SHEER = ULTPV  AT STATIONS YSTRC                   00000225
2037     C  DEPTHS AT TSEC(55 THRU 66)                                          0000.226
2038     C                                                                      00000227
2039     C                                                                      00000230
2040           EQUIVALENCE  (S(95), ANS(1))                                     0000024
2041     C                                                                      00000250
2042           EQUIVALENCE           (TCOM(2061),D(1))                          00000260
2043          1,   (D(124),AC),       (D(125),FSLOC),     (D(126),RSLOC)       00000270
2044          2,   (D(127),EALOC),                        (D(195),FBR)         00000280
2045          3,   (D(198),COPVT),    (D(199),DN),        (D(200),DYPVT)       00000290
2046          4,   (D(201), XPV1),    (D(202),THPFWD),    (D(203),THPAFT)      00000300
2047          5,   (D(240),WAREA),    (D(241),WAR),       (D(242),WSMP)        00000310
2048          6,   (D(243),MTOC),     (D(244),MTR),       (D(245),WSIG)        00000320
2049          7,   (D(192),CKA),     (D(193),CKB),        (D(194),CKC)         00000330
2050          8,   (D(156),DP1),      (D(157),DP2),      (D(189),PERFTU)       0000034O
2051          9,   (D(188),DEPTH)                                              PIV00341
205      C                                                                      00000350
2053           EQUIVALENCE   (D(1),D1), (D(2),D2), (D(3),D3), (D(4),D4)        00000360
2054          1, (D(5),D5), (D(6),D6), (D(7),D7), (D(8),D8), (D(9),D9)         00000370
2055          2, (D(10),D10), (D(11),D11), (D(12),D12), (D(15),P1)             00000380
2056     C                                                                      0000034O
2057     C                                                                      0000034O
2058     C          * K                                                           0520
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CARD NO   ****                         CONTENTS                            ****

             S(76) = CKA/(S(21)/S(20) + C*D)**2 + CKC                      6510
             S(77) = 0.0                                                   6530
             S(78) = 0.0                                                   6540
             S(80) = PT(88)                                                6550
        C            = THETA FWD 1ST TIME  = INCREMENT WHEN LOOP BACK      6555
          78 S(79) = (D(1)/((D(4)*S(78)/D(15))**2+D(1)))*COS(D(2)*S(70)/D(3))  6560
             S(79) = S(79) * S(23)/PT(82)                                  6570
             S(82) = SIN( S(80))                                           6600
             S(83) = COS( S(80))                                           6610
             S(84) = S(79)*S(8. )/S(22)                                    6620
        C            =  P TOR   = TORSION                                  6630
             S(85) = S(79)*ABS(S(83))/S(22)                                6640
        C            = C T = TENSION                                       6650
            S(88)= (S(84)/S(76)*S(20)/EC)**2                           00006660
        C            = A                                                   6670
            S(89)= (S(85)/(S(19)*PERFTU*FTU) )**2                      00006670
        C            = B                                                   6690
             S(90) = S(89)                                                 6700
        C            =  X1 = B FOR 1ST. TIME                               6710
          79 S(91) = ( S(88) + S(89)*S(90)**2)**D(21)                      6720
        C            = X2 = CUBE ROOT ( A + B(X1)SQ )                      6730
             S(92) = ABS( S(91) - S(90))                                   6740
        C                                                                  6750
            IF(S(92)- 0000001)               81,81, 80                     6760
        C                                                                  6770
          80 S(90) = S(91)                                                 6780
        C                X1 = X2,GO BACK FOR ANOTHER X2                    6790
                                             GO TO 79                      6800
          81 S(93) = SQRT(S(91))                                           6810
        C                                                                  6820
            IF( S(93) - S(77) )              83,83, 82                     6830
        C                                          ALWAYS SAVE GREATEST    6840
          82 S(77) = S(93)                                                 6850
             TX    = THPFWD + S(78)/D(16)                                  6860
          83 S(78) = S(78) + S(30)                                         6870
             S(80) = S(78) + PT(88)                                        6880
            IF(PT(89) - S(80))               85, 78,78                     6890
        C                                                                  6900
          85 TL    = S(77)                                                 6910
            RETURN                                                         6920
            END                                                            6930
        C*********************************************************************
        C
        C       *****SUBROUTINE CSECH*****
        C   ***CENTER-SECTION WEIGHT EVALUATION***
        C
        C*********************************************************************
        C
            SUBROUTINE CSECH                                           CSEC0010
        C                                                              CSEC0011
        C                CENTER-SECTION WEIGHT/ WT/IN CALC. SUBR       CSEC0020
        C                                                              CSEC0030
        C                                                              CSEC0040
        C     USE WT/IN DATA IN TW REGION -01-25-GG -- NO V.F. --      CSEC0080
        C     C-SEC WTS = LB/A.V                                       CSEC0090
        C                                                              CSEC0100
        C                                                              CSEC0120
            COMMON TCOM(7120)                                          CSEC0130
        C                                                              CSEC0140
            DIMENSION T(2060),D(2060),CD(2000),ND(100),DC(100),        CSEC0150
           1TDC(200),TSC(420),TSS(100),TWT(400),TSEC(300),TW(900),     CSEC0151
           2YSTRC(11),                                                 CSEC0152
           3DELCS(20),DLCLR(4),                                        CSEC0153
           4DELTB(30)                                                  CSEC0160
        C                                                              CSEC0170
            EQUIVALENCE (T(1),TCOM(1)),(D(1),TCOM(2061)),(CD(1),TCOM(4121)),  CSEC0180
           1(ND(1),TCOM(6121)),(TW(1),TCOM(6221)),                     CSEC0181
           2(DC(1),D(1401)),(TDC(1),T(1341)),(TSC(1),T(1541)),         CSEC0182
           3(TSS(1),T(1961)),(TWT(1),CD(1101)),(TSEC(1),CD(1501)),     CSEC0183
           4(YSTRC(1),TSCC(166)),                                      CSEC0184
           5(SDRHO,TWT(175)),(DMISC,T(191)),                           CSEC0185
```

CARD NO	****	CONTENTS	****
2130		6(CSAD,DI(80)),(CSSPN,DI(24)),(WESEC,TI)),	CSEC0185
2131		7(CSDEL,DI(81)),(DELCS(1),DI(82)),(DLCLR(1),DI(82)),	CSEC0187
2132		8(DELTB(1),TWT(25)),(DLRRC,DELTB(2)),(DLR*?,DELTB(3)),	CSEC0188
2133		9(L,ND(28)),(K,ND(29)),(J,ND(30)),(I,ND(31))	CSEC0189
2134	C		CSEC0190
2135	C		CSEC0200
2136	C		CSEC0210
2137	C		CSEC0260
2138	C	---TEMP--- USE OPNL COEFF * CSDEL AND DELMISC WING -01-24-66	CSEC0270
2139	C	WT/IN AT ROOT IN TWT(501) TO TWT(550)	CSEC0280
2140	C	SAVE WT/IN DATA IN 551-601 FOR PIVOT DELTA WT.	CSEC0290
2141	C	CLEAR TSS REGION	CSEC0300
2142		%00 DO %01 I=1,50	CSEC0310
2143		TSS(I)=DC(3)	CSEC0320
2144		TWT(I+330)=DC(3)	CSEC0330
2145		TWT(I+550)= DC(3)	CSEC0340
2146		%01 CONTINUE	CSEC0350
2147	C		CSEC0359
2148	C	TEST FOR CALC	CSEC0360
2149		IF (CSAD+CSSPN+CSDEL) %10,%99,%10	CSEC0370
2150	C		CSEC0379
2151	C	SETUP DATA	CSEC0380
2152		%10 TSS(26) = WESEC	CSEC0390
2153		TSS(27) = WESEC	CSEC0400
2154		TSS(28)= CSSPN*DI(9)	CSEC0410
2155		TSS(29)= IDC(78)	CSEC0420
2156		TSS(30)= T(52)*IDC(78)/T(100)	CSEC0430
2157		TSS(31)= SQRND*TSS(28)	CSEC0440
2158		TSS(32)= SQRT (TSS(27)/IDC(77))	CSEC0450
2159		TSS(33)= TSS(32)*SQRT (TSS(29)/TSS(30))	CSEC0460
2160		TSS(34)= (DI(1)* TSS(33))/DI(2)	CSEC0470
2161		TSS(35)= (DI(1)* TSS(33))/DI(2)	CSEC0480
2162		TSS(39)= SQRT (DI(1)/TSS(33)/TSS(33))	CSEC0490
2163		TSS(40)= SQRT (DI(1)* TSS(33)*TSS(33))	CSEC0500
2164	C		CSEC0510
2165	C	C-L RIB. =F(RT,RIB, AICL,RT),W(CL,RT))	CSEC0520
2166		%11 TSS(36) = TWT(36)*TSS(32)/DLRRC	CSEC0530
2167		TWT(379)= DLCLR(2)*TSS(36)	CSEC0540
2168		TSS(37) = TWT(37)*TSS(33)/DLT3R	CSEC0550
2169		TWT(380)= DLCLR(3)*TSS(37)	CSEC0560
2170		TSS(19)= TSS(36) + TSS(37)	CSEC0570
2171		TSS(38)= TSS(19)*DI(24) - TSS(19)	CSEC0580
2172		TWT(356)= DLCLR(4)*TSS(38)	CSEC0590
2173		TWT(355)=DLCLR(1)*(TWT(379)+TWT(380))	CSEC0600
2174	C		CSEC0610
2175	C	DO BOX IN LOOP J=1,2 K=1,4 L=1,5	CSEC0620
2176		%20 DO %29 J=1,2	CSEC0630
2177		K=J*ND(3)-ND(2)	CSEC0640
2178		L=J*ND(4)-ND(3)	CSEC0650
2179	C		CSEC0660
2180	C	COVER WT/IN RT AND C-L.	CSEC0670
2181		TWT(K+338)= TWT(J+509)*DELCS(K+1)/DELTB(K+1)	CSEC0680
2182		TWT(K+362)=TWT(K+338)*TSS(34)	CSEC0690
2183		TWT(K+339)= TWT(J+503)*DELCS(K+2)/DELTB(K+2)	CSEC0700
2184		TWT(K+363)= TWT(K+339)*TSS(34)	CSEC0710
2185		TWT(K+340)=(DELCS(7)*(TWT(J+505)+TWT(J+522)))/DELTB(7)	CSEC0720
2186		TWT(K+364)=DELCS(7)*(TWT(J+505)*TSS(34) +TWT(J+522)*TSS(39))/DELTB(7	CSEC0730
2187		))	CSEC0740
2188	C		CSEC0749
2189	C	SUM COVERS	CSEC0750
2190		%21 TWT(J+332)= DELCS(J)*(TWT(K+338)+TWT(K+339)+TWT(K+340))	CSEC0760
2191		TWT(J+356)= DELCS(J)*(TWT(K+362)+TWT(K+363)+TWT(K+364))	CSEC0770
2192	C		CSEC0779
2193	C	FS/RS	CSEC0780
2194		%22 TWT(J+344)=DELCS(L+13)*TWT(J+515)/DELTB(L+13)	CSEC0790
2195		TWT(J+368)=TWT(J+344)*TSS(39)	CSEC0800
2196		TWT(J+345)=DELCS(L+14)*TWT(J+513)/DELTB(L+14)	CSEC0810
2197		TWT(J+370)=TWT(J+346)*TSS(40)	CSEC0820
2198		TWT(338)= TWT(J+524)*DELCS(L+15)/DELTB(L+15)	CSEC0830
2199		TWT(362)= TWT(338)*TSS(39)	CSEC0840
2200		TWT(J+335)= DELCS(L+12)*(TWT(J+344)+TWT(J+346))	CSEC0850

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CARD NO  ****                          CONTENTS                          ****
2201            TWT(J+359)= DELCS(L+12)*(TWT(J+368)+TWT(J+370))          CSEC0860
2202      C                                                              CSEC0869
2203      C      LOOP J,K,L                                              CSEC0870
2204       429  CONTINUE                                                 CSEC0880
2205      C                                                              CSEC0890
2206      C       RIBS                                                   CSEC0900
2207       430  TWT(335)=DELCS(9)*DELCS(10)/DELTB(8)*TW(503)/DELTB(10)   CSEC0910
2208            TWT(359)= TWT(335)*TSS(35)                               CSEC0920
2209      C                                                              CSEC0930
2210      C       MISC ATT.                                              CSEC0940
2211       431  TWT(400)=TW(509)*DELCS(8)/DELTB(8)                       CSEC0950
2212            TWT(399) =TW(527)*DELCS(11)/DELTB(8)                     CSEC0960
2213            TWT(338)= TWT(338)+TWT(400)+TWT(399)                     CSEC0970
2214            TWT(362)= TWT(362) + TWT(400)*TSS(34) + TWT(399)*TSS(35) CSEC0980
2215      C                                                              CSEC0990
2216      C       J,S(UPR,LWR,ATT)                                       CSEC1000
2217       432  TWT(352)=TW(545)*DELCS(7)/DELTB(7)                       CSEC1010
2218            TWT(353)=TW(546)*DELCS(7)/DELTB(7)                       CSEC1020
2219            TWT(354)=TW(547)*DELCS(8)/DELTB(8)                       CSEC1030
2220            DO 433 I=1,3                                             CSEC1040
2221            TWT(I+375)= TWT(I+351)*TSS(34)/D(19)                     CSEC1050
2222       433  CONTINUE                                                 CSEC1060
2223      C                                                              CSEC1070
2224      C       C-SEC WT=(B1/2)*(WT/IN(RT+CL))                         CSEC1080
2225       440  DO 441 I=1,16                                            CSEC1090
2226            TSS(I+2)= TSS(20)*(TWT(I+332)+TWT(I+356))                CSEC1100
2227      C                                                              CSEC1119
2228       441  CONTINUE                                                 CSEC1110
2229      C       RESET FS(N), RS(C)                                     CSEC1120
2230            TSS(2)=TSS(16)                                           CSEC1130
2231            TSS(16)=TSS(17)                                          CSEC1140
2232            TSS(17)=TSS(2)                                           CSEC1150
2233      C                                                              CSEC1160
2234      C     MOVE CHORDWISE ITEMS AND ADD --USK,LSK MISC, ATT, CL RIB CSEC1170
2235       442  TSS(11)= TSS(11)+ TWT(352)+TWT(376)                      CSEC1180
2236            TSS(14)= TSS(14)+ TWT(353)+TWT(377)                      CSEC1190
2237            TSS(3) =(TSS(11)+TSS(10)+ TSS(9))*DELCS(1)               CSEC1200
2238            TSS(4)=(TSS(14)+TSS(13)+TSS(12))*DELCS(4)                CSEC1210
2239            TSS(8)= TSS(8)+TWT(354)+TWT(356)+TWT(378)                CSEC1220
2240            TSS(19)= TWT(355)                                        CSEC1230
2241            TSS(1)= TSS(19)                                          CSEC1240
2242      C                                                              CSEC1250
2243      C       SUM WT/IN (RT,CL)*DELCS, TOTAL C-S WT.                 CSEC1260
2244       450  DO 451 I=1,8                                            CSEC1270
2245            TWT(331)=TWT(331)+TWT(I+342)                             CSEC1280
2246            TWT(332)=TWT(332)+TWT(I+356)                             CSEC1290
2247            TSS(1)= TSS(1)+ TSS(I+2)                                 CSEC1300
2248       451  CONTINUE                                                 CSEC1310
2249      C                                                              CSEC1320
2250      C      APPLY COEFF.(C-SEC) AND COMPUTE MISC.                   CSEC1330
2251            TWT(331)=CSDEL*TWT(331)                                  CSEC1340
2252            TSS(1)= CSDEL*TSS(1)                                     CSEC1350
2253            TSS(2) = TSS(1)*DMISC                                    CSEC1370
2254      C                                                              CSEC1380
2255      C       SETUP FOR EXIT-- MOVE WT/IN DATA TO TH REGION          CSEC1390
2256       490  DO 491 I=1,50                                           CSEC1400
2257            TW(I+550)= TWT(I+330)                                    CSEC1410
2258       491  CONTINUE                                                 CSEC1420
2259      C                                                              CSEC1430
2260       499  RETURN                                                   CSEC1450
2261            END                                                      CSEC1460
2262      C*************************************************************************
2263      C
2264      C       *****SUBROUTINE DLPVT*****
2265      C   ***EVALUATION OF T-BOX STRUCTURE REPLACED BY PIVOT***
2266      C
2267      C*************************************************************************
2268      C
2269            SUBROUTINE DLPVT                                         DLPV0010
2270      C                                                              DLPV0011
2271      C               DELTA TBOX WT. CALC. SUBR. FOR PIVOT           21065020
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CARD NO  ****                          CONTENTS                          ****
 2272    C                                                                21065030
 2273    C                                                                21065060
 2274    C     SAVE WT SUMMARY IN TSS(21-48)                              21065070
 2275    C                                                                21065080
 2276          COMMON TCOM(6220),TW(900)                                  21065110
 2277          COMMON /IPRINT/ IP(80)
 2278    C                                                                21065120
 2279          DIMENSION   T(2060),   D(2060),   CD(2000),   ND(100)      21065130
 2280         1,DC(100),   TDC(200),  TSC(420),  TSS(100),  TWT(400)      21065140
 2281         2,TSEC(300), PT(100),   S(200),    YSTRC(11), DEL(30)       21065150
 2282         3,DELPV(7),  DLCS(28)                                       21065160
 2283    C                                                                21065170
 2284          EQUIVALENCE           (TCOM(1),T(1)),      (TCOM(2061),D(1)) 21065180
 2285         1,(TCOM(4121),CD(1)),  (TCOM(6121),ND(1))                   21065190
 2286    C                                                                21065200
 2287          EQUIVALENCE           (T(15), B102),       (T(16),B1502)     21065210
 2288         1,(T(76),COSEA),       (T(1001),S(1)),      (T(1341),TDC(1))  21065220
 2289         2,(T(1541),TSC(1)),    (T(1961),TSS(1)),    (T(1901),PT(1))   21065230
 2290    C                                                                21065240
 2291    C                                                                21065247
 2292          EQUIVALENCE           (D(480),CSHD),       (D(481),CSDEL)    21065250
 2293         1,(D(482),DLCS(1)),    (D(530),DELPV(1)),   (D(1401),DC(1))   21065260
 2294         2,(DC(3),ZERO),        (D(1),D1),           (D(2),D2)         21065270
 2295         3,(WCSEC,T(5))                                                21065271
 2296    C                                                                21065280
 2297          EQUIVALENCE           (CD(1101),TWT(1)),   (DLT8X,T(188))    21065290
 2298         1,(TWT(251),DEL(1)),   (CD(1501),TSEC(1)),  (TSEC(166),YSTRC(1)) 21065300
 2299    C                                                                21065310
 2300          EQUIVALENCE           (ND(1),ND1),         (ND(2),ND2)       21065320
 2301         1,(ND(3),ND3),         (ND(4),ND4),         (ND(5),ND5)       21065330
 2302         2,(ND(6),ND6),         (ND(7),ND7),         (ND(8),ND8)       21065340
 2303         3,(ND(9),ND9),         (ND(10),ND10),       (ND(11),ND11)     21065350
 2304         4,(ND(12),ND12),       (ND(28),M),          (ND(29),K)        21065360
 2305         5,(ND(30),J),          (ND(31),N),          (ND(47),IC)       21065370
 2306         6,(ND(55),ISEC),       (ND(56),NODW),       (ND(57),IGW)      21065380
 2307    C                                                                21065390
 2308    C
 2309    C
 2310          IF(IP(26))5001,5001,5002
 2311     5001 CONTINUE
 2312          WRITE(6,800)
 2313      800 FORMAT(1H1,30X,16H*** TW ARRAY ***,43X,20H** DLPVT - IP(26) **//)
 2314          DO 801 N=1,869,5
 2315          L1 = N
 2316          L2 = N + 4
 2317          IF(TW(N) + TW(N+1) + TW(N+2) + TW(N+3) + TW(N+4))801,801,802
 2318      802 WRITE(6,803)N,(TW(K),K=L1,L2)
 2319      803 FORMAT(I6,5E18.8)
 2320      801 CONTINUE
 2321     5002 CONTINUE
 2322    C
 2323    C
 2324    C                              CLEAR TWT(321 THRU 400)             21065400
 2325          DO 10 I=ND1,70                                               21065410
 2326             TWT(I+330) = ZERO                                         21065420
 2327       10 CONTINUE                                                    21065430
 2328    C                                                                21065439
 2329    C                              SETUP RT. RIB DATA                  21065440
 2330          I=IGW*ND10+ND10                                              21065450
 2331         TWT(328) = CD(I+334)                                          21065460
 2332         TWT(329) = CD(I+335)                                          21065470
 2333         TWT(330) = CD(I+336)                                          21065480
 2334    C                                                                21065490
 2335          TWT(388) = PT(70)                                           21065500
 2336          TWT(386) = PT(70)/COSEA                                     21065510
 2337    C                                                                21065518
 2338    C              = INBOARD EDGE PIVOT STRUC. IN STRUCTURAL SYSTEM   21065519
 2339         TWT(398) = S(25)                                             21065520
 2340         TWT(397) = S(25)/COSEA                                       21065530
 2341    C              = OUTBOARD EDGE PIVOT STRUC.                      21065535
 2342    C                 COMPUTE WIDTHS, SETUP OUTPUT DATA---GEOMETRY---------21065540
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CARD NO  ****                          CONTENTS                          ****
2343      C                  TSEC(55) = WIDTH AT MOST INBOARD STATION,YSTRC(1)21065550
2344      C                  TSEC(47)=WIDTH AT 3RD PT. IN FROM TIP          21065560
2345      C                                                                 21065569
2346            TWT(381) = (TSEC(47)-TSEC(55))/(YSTRC( 3)-YSTRC(1))        21065570
2347      C                                                                 21065579
2348      C            = TANGENT OF WING BOX (ASSUME STRAIGHT STRUCTURE)    21065575
2349           TWT(400) = (TSEC(55) - WCSEC)/B102                           21065580
2350            TSS(50)  = S(25)                                            21065590
2351            TSS(49)  = PT(70)                                           21065600
2352           TSS(48) = WCSEC                                              21065610
2353                 IC = ND1                                               21065620
2354      C                                                                 21065629
2355      C     SET IC=1 FOR WT CALC.   IC=2 EXIT -  NO CSEC.               21065630
2356      C                                                                 21065640
2357            IF(TWT(399)- B102)              110, 140, 130               21065650
2358      C                                                                 21065660
2359        110 TSS(48) = TSEC(55)                                          21065670
2360        120 TSS(47) = WCSEC + TWT(400)*TWT(398)                         21065680
2361                                            GO TO 160                   21065690
2362        130 TSS(48) = TSEC(55) + (TWT(397) - YSTRC(1)) * TWT(381)       21065700
2363      C                                                                 21065710
2364        140 IF( B102 - TWT(398))            150, 120,120                21065720
2365      C                                                                 21065730
2366        150 TSS(47) = TSEC(55) + (TWT(396) - YSTRC(1)) * TWT(381)       21065740
2367      C                     TEST FOR LOCATION OF PIVOT                  21065750
2368        160 IF ( B102 - S(25))              170, 600,600                21065760
2369      C * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *21065765
2370      C PIVOT OUTBOARD OF B1/2                                          21065770
2371      C          SETUP PANEL WT CALC.   10 PANELS.                      21065780
2372        170 I=ND1                                                       21065790
2373        200 TWT(383) = YSTRC(I)                                         21065800
2374            TWT(382) = YSTRC(I+1)                                       21065810
2375            TWT(395) = TWT(383)                                         21065820
2376      C   TEST  YS OB  WITH Y(I+1)                                      21065830
2377      C                                                                 21065840
2378            IF(TWT(382)-TWT(397))           210, 440,440                21065850
2379      C                                                                 21065860
2380        210 IF(TWT(397).LT.TWT(395))  TWT(395)=TWT(397)                 21065870
2381      C                                                                 21065880
2382            TWT(394) = TWT(382)                                         21065890
2383      C   TEST INBOARD Y                                                21065900
2384            IF(TWT(394)-TWT(396))           240,240, 250                21065910
2385      C                                                                 21065920
2386      C       SET IC=2 FOR EXIT ON PANEL(2) CALC.   NO C-SEC. WT.       21065930
2387      C          PANEL WTS=WTS/SIDE                                     21065940
2388        240 IC = ND2                                                    21065950
2389            TWT(394) = TWT(396)                                         21065960
2390        250 TWT(393) = YSTRC(I)-YSTRC(I+1)                              21065970
2391            TWT(392) = TWT(395)-TWT(382)                                21065980
2392            TWT(391) = TWT(394)-TWT(382)                                21065990
2393            TWT(390) = TWT(392)/TWT(393)                                21066000
2394            TWT(389) = TWT(391)/TWT(393)                                21066010
2395            TWT(384) = (TWT(395)-TWT(394))/D2                           21066020
2396      C                                                                 21066030
2397      C   SETUP  INTERPOLATION.                                         21066040
2398      C          DO BOX ONLY  (27)                                      21066050
2399      C                                                                 21066060
2400        260 K=(I-ND1)*50+ND1                                            21066070
2401            DO  270  J=ND1,27                                           21066080
2402                     N = K+J-ND1                                        21066090
2403                TWT(388) = TW(N+50)                                     21066100
2404                TWT(387) = TW(N)-TW(N+50)                               21066110
2405                TWT(386) = TWT(388)+TWT(387)*TWT(390)                   21066120
2406                TWT(385) = TWT(388)+TWT(387)*TWT(393)                   21066130
2407                TWT(J+330)=(TWT(385)+TWT(386))*TWT(384) + TWT(J+330)    21066140
2408        270 CONTINUE                                                    21066150
2409      C                                                                 21066160
2410      C                  CALC.  JTS, BLND, DELTA RIBS -- INBD/OUTBD     21066170
2411      C                     IF YP(I,0)=YS(I,0), ASSUME NO CHANGE.       21066180
2412      C                                                                 21066190
2413        280 TWT(400) = ZERO                                             21066200
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CARD NO	**** CONTENTS ****	
2414	IF(TWT(383) - TWT(397)) 290, 300, 320	21066210
2415	C	21066220
2416	C YP(0) OUTBOARD OF YS(0(1))	21066230
2417	290 TWT(400) = DI	21066240
2418	300 TWT(381) = DI	21066250
2419	M=K	21066260
2420	310 TWT(358) = TWT(358) + TW(M+44)*TWT(381)	21066270
2421	TWT(359) = TWT(359) + TW(M+45)*TWT(381)	21066280
2422	TWT(360) = TWT(360) + TW(M+46)*TWT(400)	21066290
2423	TWT(361) = TWT(361) + TW(M+47)*TWT(400)	21066300
2424	TWT(362) = TWT(362) - TW(M+48)*TWT(400)	21066310
2425	GO TO 360	21066320
2426	C	21066330
2427	C YP(0) INBD OF YS(0(1))...ADD JOINT WT. TEST INBD AND OUTBD.	21066340
2428	C COMPUTE WIDTH OF YP(0)	21066350
2429	320 M=K+50	21066360
2430	TWT(380) = TSEC(I+45)	21066370
2431	C	21066380
2432	IF(TW(M+46)) 330,330, 340	21066390
2433	330 M=K	21066400
2434	TWT(380) = TSEC(I+44)	21066410
2435	340 TWT(301) = DI - (SQRT(TSS(48)/TWT(380) + DI))	21066420
2436	TWT(400) = TWT(381)	21066430
2437	C	21066440
2438	IF(TW(M+46)) 350,350, 310	21066450
2439	C	21066460
2440	C NO BLHD, INBD OR OUTBD ... USE INBD DATA	21066470
2441	350 TWT(381) = DI - (SQRT(TSS(48)/TSEC(I+45) + DI))	21066480
2442	TWT(358) = TWT(358) + (D(57)*TW(391)*(TW(K+50)+TW(K+53)/D2))	21066490
2443	TWT(359) = TWT(359) + (D(57)*TWT(381)*(TW(K+51)+TW(K+54)/D2))	21066500
2444	TWT(360) = TWT(360) + (D(57)*TWT(381)* TW(K+57))	21066510
2445	C	21066518
2446	C *T-BAR(LWR)*	21066519
2447	M=I*10-ND1	21066520
2448	TWT(400) = TW(K+52)*CD(M+213)	21066530
2449	TWT(362) = TWT(362) - TWT(400)	21066540
2450	TWT(381) = TWT(301) + D(57)*TWT(381)*TWT(400)	21066550
2451	C	21066560
2452	C DO INBD RIB ONLY WHEN IC=2	21066570
2453	360 IF(IC .EQ. ND2) GO TO 380	21066580
2454	C GO TO LOOP BACK	21066610
2455	GO TO 440	21066620
2456	C IC=2	21066630
2457	380 TWT(400) = ZERO	21066640
2458	TWT(3/1) = ZERO	21066650
2459	IF(B102 - TWT(398)) 390, 520, 510	21066660
2460	390 TWT(381) = SQRT(TSS(47)/TSEC(I+45) + DI) - DI	21066670
2461	C	21066680
2462	C TEST PANEL NO.	21066690
2463	IF(ND9-1) 400, 430,430	21066700
2464	C	21066710
2465	C TEST INBD JT/BLHD	21066720
2466	400 IF(TW(K+96)) 410,410, 5??	21066730
2467	C	21066740
2468	410 M=K-50	21066750
2469	TWT(381) = DI - SQRT(TSS(47)/TSEC(I+44) + DI)	21066760
2470	C	21066770
2471	IF(TW(K+46)) 420,420, 525	21066780
2472	C	21066790
2473	420 M=ND9*50+1	21066800
2474	TWT(381) = DI - SQRT(TSS(47)/TSEC(55) + DI)	21066810
2475	TWT(361) = TWT(361)+TWT(381)*TWT(320)	21066820
2476	GO TO 540	21066830
2477	C	21066840
2478	C INBD PANEL	21066850
2479	430 TWT(361) = TWT(361) + TW(K+97)	21066860
2480	M=K	21066870
2481	GO TO 530	21066880
2482	440 I=I+ND1	21066890
2483	IF(I.LE.ND10) GO TO 200	21066900
2484	C	21066910

```
CARD NO  ****                        CONTENTS                             ***
          500  I=ND10                                                      21066920
       C               EXIT LOOP.  DELETE INBD JT,BLHD,RIB,MISC. AND RT RIBS  21066930
       C               DO C-SEC. IC=1                                      21066940
          510  TWT(400) = D1                                               21066950
               TWT(381) = D1                                               21066960
          520  M=K                                                         21066970
          525  TWT(361) = TWT(361) + TW(M+97)*TWT(381)                     21066980
          530  TWT(363) = TWT(328)*TWT(400)                                21066990
               TWT(364) = TWT(329)*TWT(400)                                21067000
               TWT(365) = TWT(330)*TWT(400)                                21067010
          540  TWT(358) = TWT(358) + TW(M+94)*TWT(381)                     21067020
               TWT(359) = TWT(359) + TW(M+95)*TWT(381)                     21067030
               TWT(360) = TWT(360) + TW(M+96)*TWT(381)                     21067040
               TWT(362) = TWT(362) - TW(M+98)*TWT(381)                     21067050
       C                                                                   21067060
       C          COMPUTE TOTAL DELTA WTS FOR OPNL.   IC=1 OR 2            21067070
       C          INCL. DELTA VF  IN ALL COMPONENT WTS.  WTS.=LBS/A V. FOR SUM  21067080
       C          OPNL WTS ARE LBS/A.V.  ...     USE TWT(1-50) FOR OPNL    21067090
       C                                                                   21067100
       C          SETUP COEFF FOR I=1        FS   I=1,2  J=1,4  K=1,3      21067110
               TWT(400) = DEL(13)                                          21067120
               DO  560  I=ND1,ND2                                          21067130
                    J=I*ND3-ND2                                            21067140
                    K=I*ND2-ND1                                            21067150
              TWT(J+18) = TWT(I+339)                                       21067160
              TWT(J+19) = TWT(I+341)                                       21067170
              TWT(J+20) = TWT(I+350)                                       21067180
              TWT(I+25) = TWT(I+347)                                       21067190
                   TWT(K+14)=TWT(I+345)*TWT(400)                           21067200
                   TWT(K+15)=TWT(I+343)*TWT(400)+TWT(I+347)                21067210
                   TWT(J+8)  =TWT(I+330)*DEL(J)   +TWT(I+339)              21067220
                   TWT(J+9)  =TWT(I+333)*DEL(J)   +TWT(I+341)              21067230
              TWT(J+10)=DEL(J)*(TWT(I+335) + TWT(I+357) + TWT(I+352) )
       C                                                                   21067250
       C                     SUM FS,RS, UC,LC                              21067260
                   TWT(I+5) = TWT(K+14) + TWT(K+15) - TWT(I+347)           21067270
                   TWT(I+1) = TWT(J+8)+TWT(J+9)+TWT(J+10)-TWT(I+339)-TWT(I+341)  21067280
                   TWT(I)   = TWT(I) + TWT(I+1) + TWT(I+5)                 21067290
                   TWT(I+5) = TWT(I+5) + TWT(I+347)                        21067300
                   TWT(I+1) = TWT(I+1)+ TWT(I+339) + TWT(I+341) + TWT(I+350)   21067310
                   TWT(J+10)= TWT(J+10)+TWT(I+350)                         21067320
              TWT(I+35) = TWT(I+363)                                       21067330
                   TWT(400) = DEL(17)                                      21067340
          560  CONTINUE                                                    21067350
       C                                                                   21067360
       C                RIB,  ATT,  BLHDS,  SUM VF                         21067370
               TWT(5) = TWT(333)+TWT(362)                                  21067380
               TWT(8) = TWT(8)+TWT(360)+TWT(355)+TWT(356)+TWT(357)+TWT(338)  21067390
              TWT(35) = TWT(363)/D(2)                                      21067400
              TWT(30) = TWT(361)                                           21067410
              TWT(1) = (TWT(1) + TWT(35) + TWT(30) + TWT(5) + TWT(8))*DLTBX  21067420
               TWT(5) = TWT(5)+TWT(350)                                    21067430
               TWT(8) = TWT(8)+TWT(339)                                    21067440
              TWT(25) = TWT(350)                                           21067450
              TWT(28) = TWT(339)                                           21067460
       C                                                                   21067470
          570  TWT(4) = TWT(4)+TWT(19)+TWT(20)+TWT(21)+TWT(22)+TWT(23)+TWT(24)  21067480
            1            + TWT(25) + TWT(26) + TWT(27) + TWT(28)           21067490
       C                                                                   21067500
       C   TEST FOR C-SEC   GO TO MOVE DATA ON 2.  SETUP INBD DATA ON 1.   21067510
       C                                                                   21067520
              IF(IC-ND2)                       600, 660, 600               21067530
       C               SETUP FOR PIVOT INBD @1/2                           21067540
       C                 IC=1  FOR  C-SEC                                  21067550
       C                                                                   21067560
       C               SETUP RATIOS FOR INTERPOLATION                      21067570
          600  TWT(395) = TWT(399)                                         21067580
              IF(TWT(395).GT.B102)          TWT(395)=B102                  21067590
              TWT(390) = TWT(395) / B102                                   21067600
              TWT(389) = TWT(390) / B102                                   21067610
              TWT(384) = (TWT(395)-TWT(398))/D2                            21067620
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CARD NO  ****                          CONTENTS                          ****
2556     C                                                                21067630
2557           DO  620  I=ND1,16                                          21067640
2558               TWT(388) = TWT(I+576)                                  21067650
2559               TWT(387) = TWT(I+552)-TWT(398)                         21067660
2560               TWT(386) = TWT(388) + TWT(387)*TWT(390)                21067670
2561               TWT(385) = TWT(388) + TWT(387)*TWT(389)                21067680
2562               TSS(I+2) = TWT(384) *(TWT(385)+TWT(386))               21067690
2563         620  CONTINUE                                                21067700
2564     C                                                                21067710
2565     C      COMPUTE DELTA WTS .....                                   21067720
2566     C                                                                21067730
2567           TWT(381) = ZERO                                            21067740
2568           IF( TWT(389) .LE. ZERO)          TWT(381) = D1             21067750
2569           TWT(400) = ZERO                                            21067760
2570           IF( TWT(390) .GE. D1 )           TWT(400) = D1             21067770
2571     C                                                                21067780
2572     C          SUM WEIGHTS      APPLY DELICU CL FS RS) TO C-SEC ELEMENTS WTS21067790
2573           TSS(9)  = TWT(381)*TWT(575)                                21067800
2574           TWT(380) = TWT(381)*(TWT(598)+TWT(576)) + TWT(400)*TWT(574)21067810
2575           TSS(8)  = TSS(8)  + TWT(380)                               21067820
2576           TWT(378) = TWT(381)*TWT(599) + TWT(400)*TWT(572)           21067830
2577           TWT(379) = TWT(381)*TWT(597) + TWT(400)*TWT(573)           21067840
2578     C                                                                21067850
2579           TWT(400) = DLCS(1)                                         21067860
2580           DO  650  I=ND1,ND2                                         21067870
2581               TWT(I+377) = DLCS(7)*TWT(I+377)*TWT(400)               21067880
2582               TSS(I+8)   = DLCS(1)*TSS(I+8)                          21067890
2583               TSS(I+11)  = DLCS(4)*TSS(I+11)                         21067900
2584               TSS(I+14)  = DLCS(13)*TSS(I+14)                        21067910
2585               TSS(I+16)  = DLCS(17)*TSS(I+16)                        21067920
2586               TSS(I+2)   = TSS(I+2) + TWT(I+377)                     21067930
2587               TWT(400)   = DLCS(4)                                   21067940
2588         650  CONTINUE                                                21067950
2589           TSS(11) = TSS(11) + TWT(378)                               21067960
2590           TSS(14) = TSS(14) + TWT(379)                               21067970
2591     C                                                                21067980
2592     C     SUM C-SEC TOTAL                                            21067990
2593           TSS(1) = CSDEL*(TSS(3)+TSS(4)+TSS(5)+TSS(6)+TSS(7)+TSS(8)) 21068000
2594     C                                                                21068010
2595     C     SUM BOX  .. INCL RT.RIB                                    21068020
2596         660  TWT(1) = TWT(1) + TWT(4)                                21068030
2597           DO  670  I=ND1,ND4                                         21068040
2598               TSS(I+4.) = S(I+94)*DELPV(I+1)                         21068050
2599               TSS(41)   = TSS(41)+TSS(I+41)                          21068060
2600         670  CONTINUE                                                21068070
2601           TSS(46) = TSS(41)*DELPV(7)                                 21068080
2602           TSS(41) = TSS(41)*DELPV(1) + TSS(46)                       21068090
2603     C                                                                21068100
2604     C            DOUBLE WTS FOR MOVE                                 21068110
2605           DO  680  I=ND1,25                                          21068120
2606               TWT(I) = TWT(I)*D2                                     21068130
2607               TWT(I+25)=TWT(I+25)*D2                                 21068140
2608               TSS(I) = TSS(I)*D2                                     21068150
2609         680  CONTINUE                                                21068160
2610     C                                                                21068167
2611     C            **MOVE DELTA RR, RR(C,W,MISC) TO TWT(31-34)**       21068168
2612     C             *FOR CM DATA STORAGE FOR WODATA/PRTO SUBR*         21068169
2613          TWT(31) = TWT(35)                                           21068170
2614          TWT(32) = TWT(36)                                           21068171
2615          TWT(33) = TWT(37)                                           21068172
2616          TWT(34) = TWT(38)                                           21068173
2617     C                                                                21068179
2618     C      MOVE PIVOT DESIGN DATA                                    21068180
2619           TSS(31) = PT(3)                                            21068190
2620     C           = C(P)                                               21068200
2621           TSS(32) = PT(9)                                            21068210
2622     C           = M(P)                                               21068220
2623           TSS(33) = PT(10)                                           21068230
2624     C           = D(P)                                               21068240
2625           TSS(34) = PT(64)                                           21068250
2626     C           = LD(P)                                              21068260
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CARD NO **** CONTENTS ****

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          TSS(35) = PT(65)                                              21068270
C                 = FBR                                                 21068280
          TSS(36) = PT(66)                                              21068290
C                 = P(OD)                                               21068300
          TSS(37) = PT(68)                                              21068310
C                 = P(ID)                                               2106P320
C                                                                       21068330
  699  RETURN                                                           DLPV99 0
       END                                                              DLPV9 39
C**********************************************************************
C
C       *****SUBROUTINE PRTA*****
C   ***DESIGN DATA PRINT - TYPE A TORQUE-BOX SYNTHESIS SUMMARY***
C
C**********************************************************************
C
      SUBROUTINE PRTA                                                   PRTA0010
C                                                                       PRTA0020
C           ***TYPE A PRINT--DESIGN SYNTHESIS AND WEIGHT DIST SUMMARY*PRTA0030
C                                                                       PRTA0040
C                                                                       PRTA0150
C                                                                       PRTA0160
C                                                                       PRTA0170
C                                                                       PRTA0190
      COMMON T(2060),D(2060),CD(2000),ND(100)                           PRTA0200
      COMMON /MISC/ XMISC(100)                                          PRTA0201
C                                                                       PRTA0210
      DIMENSION DC(100),TDC(200),TSC(420),TSS(100),THT(400),TSEC(300),  PRTA0230
     1TC(340),TO(40),TR(40),                                            PRTA0231
     2YSTRC(11),TBWPI(11),GJROD(11),                                    PRTA0232
     3TOGW(3),DGW(3),                                                   PRTA0233
     4TOWV(11),TOWM(11),TOWT(11),                                       PRTA0234
     5ULTPV(11),ULTPM(11),ULTPT(11),                                    PRTA0235
     6ULTNV(11),ULTNM(11),ULTNT(11),                                    PRTA0236
     7YBUI(11),YBLI(11),YBUD(11),YBLD(11),                              PRTA0237
     9R(16)                                                             PRTA0239
C                                                                       PRTA0240
C                                                                       PRTA0250
      EQUIVALENCE (DC(1),D(1401)),(TDC(1),T(1341)),(TSC(1),T(1541)),    PRTA0260
     1(TSS(1),T(1961)),(THT(1),CD(1101)),(TSEC(1),CD(1501)),            PRTA0261
     2(TC(1),T(960)),(TO(1),T(920)),(YSTRC(1),TSEC(166)),               PRTA0262
     3(TOGW(1),D(80)),(DGW(1),D(102)),(DPNZ,T(20)),(DNNZ,T(21)),        PRTA0263
     4(TR(1),T(1300)),(R(1),XMISC(85)),                                 PRTA0264
     5(TOWV(1),CD(1968)),(TOWM(1),CD(1979)),(TOWT(1),CD(1990)),         PRTA0265
     6(ULTPV(1),TSEC(12)),(ULTPM(1),TSEC(1)),(ULTPT(1),TSEC(144)),      PRTA0266
     7(ULTNV(1),TSEC(111)),(ULTNM(1),TSEC(122)),(ULTNT(1),TSEC(155)),   PRTA0267
     8(YBUI(1),TSEC(133)),(YBLI(1),TSEC(188)),(TBWPI(1),T(745)),        PRTA0268
     9(YBUD(1),T(679)),(YBLD(1),T(690)),(GJROD(1),T(668))               PRTA0269
C                                                                       PRTA0270
      EQUIVALENCE (NCASE,ND(60)),(NODW,ND(56)),(IGW,ND(61)),            PRTA0280
     1(IOPI,ND(74)),(IOPJ,ND(80)),(IOPP,ND(81)),(IOPI,ND(82)),          PRTA0281
     2(I,ND(27)),(L,ND(29)),(K,ND(30)),(N,ND(31)),(J2,ND(28)),          PRTA0282
     3(WWVID,T(57)),                                                    PRTA0283
     9(NPAGE,ND(85))                                                    PRTA0289
C                                                                       PRTA0290
C                                                                       PRTA0300
C                                                                       PRTA0340
C                                                                       PRTA0345
C          ****PRINT PAGE HEAD****                                      PRTA0346
C           ***TEST FOR TYPE OF ANALYSIS***                             PRTA0347
      IND = 1
  500 WRITE(6,100)NCASE,(R(N),N=1,8)
  100 FORMAT(1H1,4HCASE,I4,1X,8A10,1X,13H** PRTA - IP()
C
      IF(NODW - 1)501,501,505
C
  501 IF(IGW - 2)490,492,490
C
  490 WRITE(6,491)
  491 FORMAT(1H+,103X,6H30) **)
      GO TO 520
```

```
CARD NO ****                                CONTENTS                                ****
 2698      C
 2699        492 WRITE(6,502)
 2700        502 FORMAT(1H+,103X,6H429) **)
 2701            GO TO 520
 2702      C
 2703        505 IF(IGW - 21515,510,515
 2704        510 WRITE(6,511)
 2705        511 FORMAT(1H+,103X,6H427) **)
 2706            GO TO 520
 2707        515 WRITE(6,516)
 2708        516 FORMAT(1H+,103X,6H428) **)
 2709      C
 2710        520 NPAGE = NPAGE + 1
 2711            WRITE(6,101)NPAGE,(R(N),N=1,16)
 2712        101 FORMAT(5H PAGE,I4,1X,8A10)
 2713      C
 2714            WRITE (6,1900)      IOP1,NDOM,IGW,DGW,IGW),OPNZ,OPNZ
 2715       1900 FORMAT (27X,                              SHIOP1=I1,6H NDOM=I1,5H IGW=IPRTA0355
 2716           11,6H  DGW=F9.1,6H  NZ=*F6.3,2H/=F5.3)                                 PRTA0356
 2717      C
 2718            GO TO (522,530,532,534),IND
 2719      C                                                                          PRTA0359
 2720        522 IF (ND(2) - IOP1) 1901,1901,1910                                     PRTA0360
 2721       1901 IF (NDOM - ND(3)) 1910,1902,1910                                     PRTA0365
 2722       1902 IF (IOPP - IOP1) 1903,1906,1903                                      PRTA0370
 2723       1903 WRITE (6,1904)IO(22)                                                 PRTA0380
 2724            GO TO 1910                                                         PRTA0390
 2725       1904 FORMAT (1H+,12X,4H PT=F4.1)                                          PRTA0400
 2726       1905 FORMAT (1H+,12X,8H IPT PT=F4.1)                                      PRTA0401
 2727       1906 WRITE (6,1905)IO(22)                                                 PRTA0405
 2728      C                                                                          PRTA0409
 2729       1910 CONTINUE
 2730      C                                                                          PRTA0450
 2731      C      TYPE A PAGE PRINT  - SECTION DATA AND WEIGHT SUMMARIES -- ID=2      PRTA0460
 2732      C      BLOCK 1 --SECTION DATA, ROOT TO TIP                                PRTA0470
 2733      C                                                                          PRTA0480
 2734        200 WRITE (6,201)                                                        PRTA0490
 2735        201 FORMAT (72H                  -**-SECTION DATA - ST. REQMTS.   NX=KIPPRTA0500
 2736           1S, FC,FT=KSI-**- /110H  SECT  =NX    -NX     FCU     FCL     FTU    FTPRTA0510
 2737           2L   TSKU  TSKL  T-U   T-L    TSTR  LRIB  BSTR  NOS HSTR  NFS  TWRSPRTA 520
 2738           3)                                                                  PRTA0530
 2739      C                                                                          PRTA0540
 2740      C      SET J2=1 FOR ST. PRINT.                                            PRTA0550
 2741             J2=ND(1)                                                           PRTA0560
 2742      C                                                                          PRTA0570
 2743      C                                                                          PRTA0580
 2744      C            **PRINT LINES 1-11, 17 ITEMS/LINE--DATA 2-18 FOR EACH SETPRTA0590
 2745        202  DO 203 N=1,11                                                     PRTA0600
 2746             L = N*18                                                           PRTA0610
 2747             K = L - 16                                                         PRTA0620
 2748             WRITE (6,204)N,(TC(I),I=K,L,1)                                     PRTA0630
 2749        203  CONTINUE                                                          PRTA0640
 2750        204  FORMAT (3X,I2,F7.2,F6.2,F6.2,4F7.2,5F6.3,F6.2,F6.3,F5.1,F5.2,2F6.3)  PRTA0650
 2751      C                                                                          PRTA0660
 2752      C                                                                          PRTA0670
 2753      C                                                                          PRTA0770
 2754      C                                                                          PRTA0780
 2755      C      TEST FOR TYPE OF DATA PRINTED  1=ST., 2=VF  EXIT ON 2              PRTA0790
 2756             IF (J2-ND(2)) 207,209,209                                          PRTA0800
 2757      C                                                                          PRTA0809
 2758      C       SET J2=2, TEST FOR VF, MOVE DATA FOR PRINT                        PRTA0810
 2759        207  J2=ND(2)                                                          PRTA0820
 2760             IF (IDC(74)) 208,209,208                                           PRTA0830
 2761        208  WRITE            (6,2080)                                         PRTA0840
 2762       2080 FORMAT (5HR                  -**-SECTION DATA - STIFF. REQMTS.-**- IPRTA0850
 2763      C                                                                          PRTA0860
 2764      C          TEST IF FLUTTER STIFFNESS PENALTIES EXIT                        PRTA0870
 2765             DO 2081 I=1,44                                                     PRTA0880
 2766             IF (CD(I+88) - D(I)) 2083,2081,2083                                PRTA0890
 2767        2081 CONTINUE                                                           PRTA0900
 2768             WRITE            (6,2082)                                         PRTA0910
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06/11/74      INPUT LISTING                    AUTOFLOW CHART SET - SWEEP   WING AND EMPENNAGE MODULE -

CARD NO       ****                              CONTENTS                              ****

 2769          2082 FORMAT (5HH0          -***-NO FLUTTER STIFFNESS PENALTIES-***-  ,PRTA0920
 2770              1/6HH0     )                                                     PRTA0930
 2771               GO TO 209                                                      PRTA0940
 2772          C                                                                   PRTA0950
 2773          C          MOVE STIFFNESS REQMT DATA                                PRTA0960
 2774           2083 DO 2084 I=1,198                                               PRTA0970
 2775               TC(I)=CD(I+201)                                                PRTA0980
 2776           2084 CONTINUE                                                      PRTA0990
 2777               GO TO 202                                                      PRTA1000
 2778          C                                                                   PRTA1010
 2779          C                                                                   PRTA1020
 2780          C      BLOCK 3 -- EI,GJ SUMMARY (INCL VI)                           PRTA1030
 2781          C      EI,GJ/1,000,000,000                                          PRTA1040
 2782          C                                                                   PRTA1050
 2783           209 WRITE            (6,220)                                      PRTA1060
 2784          C                                                                   PRTA1070
 2785           220 FORMAT (60HO                -**-SECTION EI,GJ SUMMARY (EI,GJ-(10)-9PRTA1080
 2786              1)-**-/10H     ITEM    SECT 1   SECT 2   SECT 3   SECT 4   SECT 5 PRTA1090
 2787              2  SECT 6   SECT 7   SECT 8   SECT 9   SECT 10   SECT 11 )       PRTA1100
 2788          C                                                                   PRTA1120
 2789          C      STRUCTURAL EI,GJ REQMT -- 3 LINES                            PRTA1130
 2790          C      PRINT DATA FROM  TSS(1) - TSS(55)                            PRTA1140
 2791          C                                                                   PRTA1150
 2792          C              PRINT DATA FROM TR(I-33).  SET UP DATA TO (10**-9)   PRTA1160
 2793               DO 2201 I=1,33                                                 PRTA1170
 2794               TR(I) = CD(I)*DC(13)                                           PRTA1180
 2795           2201 CONTINUE                                                      PRTA1190
 2796          C                                                                   PRTA1230
 2797          C      LINES 1,2,3 = ST  DATA                                       PRTA1240
 2798          C      LINES 4,5 = GJ RATIO AND FJVF. DATA                          PRTA1250
 2799          C      LINES 6,7,8,9 = COMPOSITE SECTION -- ST + VF -- DATA.        PRTA1260
 2800          C      LINES 10,11,12,13 = TVF/T(ST) RATIOS                         PRTA1270
 2801          C                                                                   PRTA1280
 2802           222 WRITE (6,223)(TR(I),I=1,22),(CD(I+44),J=1,11)                  PRTA1290
 2803          C                                                                   PRTA1300
 2804           223 FORMAT (10H    GJ-ST.11F9.2,/10H    EI-ST.11F9.1,/10H GJ/EI-ST.11FPRTA1310
 2805              19.4)                                                          PRTA1320
 2806          C                                                                   PRTA1330
 2807          C         TEST FOR GJVF                                            PRTA1340
 2808               IF (GJRQD(1)) 240,240,224                                      PRTA1345
 2809           224 DO 2240 I=1,11                                                 PRTA1350
 2810               TR(I) = GJRQD(I)*DC(13)                                        PRTA1355
 2811               TR(I+11) = CD(I+33)*DC(13)                                     PRTA1356
 2812           2240 CONTINUE                                                      PRTA1358
 2813          C                                                                   PRTA1359
 2814               WRITE (6,225)(CD(I+66),I=1,11),(TR(I),I=1,11)                  PRTA1360
 2815           225 FORMAT (10H GJS/GJVF 11F9.4,/10H    GJ-VF 11F9.2)              PRTA1370
 2816          C                                                                   PRTA1380
 2817          C       LINES 6-13                                                  PRTA1390
 2818           226 WRITE            (6,227)(TR(I+22),I=1,11),(TR(I+11),I=1,11),(CD(PRTA1400
 2819              I+55),I=1,11),(CD(I+77),I=1,11),(CD(I+88),I=1,11),(CD(I+99),I=1,11)PRTA1410
 2820              ,(CD(I+110),I=1,11),(CD(I+121),I=1,11)                         PRTA1420
 2821          C                                                                   PRTA1430
 2822           227 FORMAT (10H  GJ-COMP.11F9.2,/10H  EI-COMP.11F9.2,/10H (GJ/EI)C.11FPRTA1440
 2823              19.4,/10H GJC/GJVF 11F9.4,/10H TVF/TSKU 11F9.4,/10H TVF/TSKL 11F9.4PRTA1450
 2824              2,/10H TVF/TWFS 11F9.4,/10H TVF/TWRS 11F9.4)                   PRTA1460
 2825          C                                                                   PRTA1470
 2826          C                                                                   PRTA1480
 2827          C       PRINT PAGE 2 -- WT AND WT/IN SUMMARY.                       PRTA1490
 2828           240 IND = 2
 2829               GO TO 500
 2830           530 WRITE            (6,241)                                      PRTA1510
 2831          C                                                                   PRTA1519
 2832           241 FORMAT (52H            -**-PANEL WEIGHT SUMMARY.  LBS/SIDE-**-/10PRTA1520
 2833              1HH PANEL       SUM       T-BOX      L.E.      T.E.      MISC.  DELPRTA1530
 2834              2TA VF       TIP         RT-RIB    C-SECT)                      PRTA1540
 2835          C                                                                   PRTA1548
 2836          C            ***ADJUST IBD/OBD WTS TO LB/SIDE AT NODH+1***          PRTA1549
 2837               IF (NODH - ND(1)) 242,242,2421                                 PRTA1550
 2838           242 TWT(50) = TWT(50)/D(2)*HAVIC                                   PRTA1551
 2839               TWT(54) = TWT(54)/D(2)*HAVID                                   PRTA1552
```

```
CARD NO   ****                        CONTENTS                          ****
               DO 2420 I=1,5                                             PRTA1553
               THT(I+54) = THT(I+54)/D(2)*WHVID                          PRTA1554
               THT(I+144) = THT(I+144)/D(2)*WHVID                        PRTA1555
          2420 CONTINUE                                                  PRTA1556
          C                                                              PRTA1559
          C                                                              PRTA1560
          C             **PRINT 10 PNL WTS PLUS INBD AND OBD**           PRTA1570
          2421 WRITE (6,243)(CD(I+133),I=1,6),THT(50),CD(140),CD(141),(THT(I+54),PRTA1580
              1I=1,5),DC(3),THT(54)                                      PRTA1581
          C                                                              PRTA1599
          243  FORMAT (7H  TOTAL,F12.2,F11.2,2F10.2,F9.2,F10.2,F11.2,4X,2F10.2,/7PRTA1590
              1H   INBD,F12.2,F11.2,2F10.2,F9.2,F10.2,15X,F10.2)         PRTA1591
          244  FORMAT (4X,I2,1X,F12.2,F11.2,2F10.2,F9.2,F10.2)           PRTA1600
          245  FORMAT (7H    OBD,F12.2,F11.2,2F10.2,F9.2,F10.2,F11.2)    PRTA1610
          C                                                              PRTA1620
          C              *PNLS 1-10.  DATA IN CD(142-201) 6/BLOCK, RT-TIP*       PRTA1630
               DO 246 N=1,10                                             PRTA1640
               L = N*ND(6)                                               PRTA1650
               K = L - ND(5)                                             PRTA1660
               WRITE (6,244)N,(CD(I+141),I=K,L,1)                        PRTA1670
          246  CONTINUE                                                  PRTA1680
          C                                                              PRTA1690
          C              *OBD PNL*                                       PRTA1700
               WRITE (6,245)(THT(I+144),I=1,5),DC(3),THT(50)             PRTA1710
          C                                                              PRTA1718
          C            ***RESET IBD/OBD PNL WTS ON NODH=1***             PRTA1719
               IF (NODH - ND(1)) 247,247,250                             PRTA1720
          247  THT(50) = THT(50)*D(2)/WHVID                              PRTA1721
               THT(54) = THT(54)*D(2)/WHVID                              PRTA1722
               DO 248 I=1,5                                              PRTA1723
               THT(I+54) = THT(I+54)*D(2)/WHVID                          PRTA1724
               THT(I+144) = THT(I+144)*D(2)/WHVID                        PRTA1725
          248  CONTINUE                                                  PRTA1726
          C                                                              PRTA1727
               THT(44) = THT(44)/D(2)*WHVID                              PRTA1728
          C                                                              PRTA1729
          C                                                              PRTA1730
          C              **WT/IN DATA**                                  PRTA1740
          250  WRITE (6,251)                                             PRTA1750
          251  FORMAT (40H            -**-WEIGHT/INCH SUMMARY ** /84H  SECT.     PRTA1760
              1  TOTAL      T-BOX      L.E        T.E.     MISC.  DELTA WF  CONC. PRTA1770
              2ITEMS  )                                                  PRTA1780
          C                                                              PRTA1790
          252  FORMAT (4X,I2,1X,F12.4,F11.4,F10.4,2F9.4,F10.4,F11.4)     PRTA1800
          C                                                              PRTA1810
          C            **DATA IN TC(220-340) 11 SETS OF 11 ITEMS, RT-TIP**      PRTA1820
          C              *PRINT FIRST 7 ITEMS OF EACH SET*               PRTA1830
               DO 253 N=1,11                                             PRTA1840
               K = N*ND(11) - ND(10)                                     PRTA1850
               L = K + ND(6)                                             PRTA1860
               WRITE (6,252)N,(TC(I+219),I=K,L,1)                        PRTA1870
          253  CONTINUE                                                  PRTA1880
          C                                                              PRTA1890
          C                                                              PRTA1900
          C            ***DESIGN LOADS SUMMARY***                        PRTA1910
          C              *ULT POSITIVE AND NEGATIVE LOADS AND 1-G TOTAL DW*      PRTA1920
               WRITE (6,261)                                             PRTA1930
          261  FORMAT (42H            -**-DESIGN LOADS SUMMARY-**- /110H  SECT. PRTA1940
              1  +V(ULT)     +M(ULT)     +T(ULT)     -V(ULT)     -M(ULT)     -T(ULPRTA1950
              2T)   VDW(1-G)   MDW(1-G)   TDW(1-G) )                     PRTA1960
          C                                                              PRTA1970
          262  FORMAT (4X,I2,F11.1,F13.1,F12.1,F11.1,2F12.1,F10.1,2F11.1)        PRTA1980
          C                                                              PRTA1990
          C              *ULT LOADS STORED TIP-ROOT. 1-G DW LOADS STORED RT-TIP* PRTA2000
               DO 263 N=1,11                                             PRTA2010
               K = ND(12) - N                                            PRTA2020
               WRITE (6,262)N,ULTPV(K),ULTPM(K),ULTPT(K),ULTNV(K),ULTNM(K),ULTNT(PRTA2030
              1K),TDWV(N),TDWM(N),TDWT(N)                                PRTA2040
          263  CONTINUE                                                  PRTA2050
               GO TO 292                                                 PRTA2060
          C                                                              PRTA2070
```

```
CARD NO  ****                          CONTENTS                          ****
  2911   C                                                                PRTA2130
  2912   C          ****TEST FOR GW(2) FOR GEOMETRY PRINT****             PRTA2140
  2913   C             **TEST FOR ZERO GW(1) AND GW(2) FOR GEOMETRY PRINT** PRTA2141
  2914    270  IF (ND(2) - IGW) 2701,271,2702                             PRTA2150
  2915    2701 IF (DGW(1)) 2702,2702,299                                   PRTA2151
  2916    2702 IF (DGW(2)) 271,271,299                                     PRTA2152
  2917   C                                                                 PRTA2159
  2918    271  IF (NOOH - ND(2)) 2720,299,299                             PRTA2160
  2919   C                                                                 PRTA2169
  2920    2720 IND = 3
  2921         GO TO 500
  2922   C                                                                 PRTA2179
  2923   C              PRINT GEOMETRY                                     PRTA2180
  2924     532 WRITE          (6,273)TSEC(176),TSEC(155),TSEC(66),TSEC(88),TSEC(PRTA2190
  2925        199),T(100),YBUD(1),YBLD(1)                                  PRTA2200
  2926    273  FORMAT (4H0            -**-SECTION GEOMETRY SUMMARY-**-   /10ZH PRTA2210
  2927        1 SECT.    YSTRC      WIDTH     DAVE      DFS       DRS      C-AERO  PRTA2220
  2928        2 Y-BU     Y-BL                    /8H     ROOT2F10.3,3F9.3,F10.3,2FPRTA2230
  2929        39.4)                                                        PRTA2240
  2930    274  FORMAT (5X,I2,1X,2F10.3,3F9.3,F10.3,2F9.4)                  PRTA2250
  2931    275  FORMAT (8H     TIP2F10.3,3F9.3,F10.3,2F9.4,//)              PRTA2260
  2932   C                                                                 PRTA2270
  2933    276  DO 277 N=2,10,1                                            PRTA2280
  2934         K=ND(12)-N                                                  PRTA2290
  2935         WRITE          (6,274)N,TSEC(K+165),TSEC(K+44),TSEC(K+55),TSEC(KPRTA2300
  2936        1+77),TSEC(K+88),T(N+99),YBUD(K),YBLD(K)                     PRTA2310
  2937    277  CONTINUE                                                    PRTA2320
  2938   C                                                                 PRTA2330
  2939   C                                                                 PRTA2340
  2940    278  WRITE          (6,275)TSEC(166),TSEC(45),TSEC(56),TSEC(78),TSEC(PRTA2350
  2941        189),T(110),YBUD(1),YBLD(1)                                  PRTA2360
  2942   C                                                                 PRTA2370
  2943   C                                                                 PRTA2380
  2944         GO TO 299                                                   PRTA2555
  2945   C                                                                 PRTA2560
  2946   C                                                                 PRTA2570
  2947   C          ***PAGE 3.  SECTION DESIGN Y(BAR) DATA.***             PRTA2580
  2948   C            *TOTAL WT SUMMARY AND SECT J WT SUMMARY*             PRTA2590
  2949    292  IND = 4
  2950         GO TO 500
  2951    534  WRITE (6,2920)                                              PRTA2610
  2952    2920 FORMAT                  (42H         -**-SECTION DESIGN Y-BAR DAPRTA2620
  2953        (TA-**-,/48H0  STA  YBU(D)  YBU(A)  YBL(D)  YBL(A)  TB-W/IN )  PRTA2621
  2954    2921 FORMAT (1H 3X,I2,4F8.4,F9.4)                                PRTA2625
  2955         DO 2922 I=1,11                                              PRTA2630
  2956         K = ND(12) - I                                              PRTA2640
  2957         WRITE (6,2921)I,YBUD(K),YBUI(K),YBLD(K),YBLI(K),TBWPI(I)    PRTA2650
  2958    2922 CONTINUE                                                    PRTA2660
  2959   C                                                                 PRTA2670
  2960   C                                                                 PRTA2680
  2961   C            **TOTAL WT SUMMARY--TWT(1-59),(145-149)*             PRTA2690
  2962         WRITE (6,293)                                               PRTA2700
  2963    293  FORMAT (1H0,/48H              -**-ROOT SECTION WEIGHT SUMMARY-**-/ PRTA2710
  2964        1 8H   TWT)                                                  PRTA2720
  2965   C                                                                 PRTA2730
  2966    294  FORMAT (3X,I2,9F11.4)                                       PRTA2740
  2967    295  FORMAT (2X,I3,5F11.4)                                       PRTA2750
  2968    296  FORMAT (1H0,/48H              -**-SECTION (J) WEIGHT SUMMARY-**- /2PRTA2760
  2969        1 8H               J=STA NO.I3,5H,  Y=F8.2,/8H   TWT)       PRTA2770
  2970   C                                                                 PRTA2780
  2971   C             *ROOT DATA*                                         PRTA2790
  2972         DO 297 N=1,94,9                                             PRTA2800
  2973         K = N + ND(8)                                               PRTA2810
  2974         WRITE (6,294)N,(TWT(I),I=N,K,1)                             PRTA2820
  2975    297  CONTINUE                                                    PRTA2830
  2976         N = 95                                                      PRTA2840
  2977         K = 145                                                     PRTA2850
  2978         WRITE (6,295)N,(TWT(I+94),I=1,5),K,(TWT(I+144),I=1,5)       PRTA2860
  2979   C                                                                 PRTA2870
  2980   C             *SECTION J DATA.  WT DATA IN TSS(1-59),(96-100)*     PRTA2880
  2981         N = ND(12) - 10PJ                                           PRTA2890
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CARD NO  ****                          CONTENTS                          ****
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2982          WRITE (6,296)IOPJ,YSIRC(II)                                PRTA2900
2983          DO 298 N=1,54,8                                            PRTA2910
2984          K = N + ND(8)                                              PRTA2920
2985          WRITE (6,297)N,(TSS(I),I=N,K,1)                            PRTA2930
2986     298  CONTINUE                                                   PRTA2940
2987          N = 55                                                     PRTA2950
2988          K = 145                                                    PRTA2960
2989          WRITE (6,295)N,(TSS(I+54),I=1,5),K,(TSS(I+95),I=1,5)       PRTA2970
2990     C                                                               PRTA2980
2991          GO TO 270                                                  PRTA2990
2992     C                                                               PRTA3000
2993     C                                                               PRTA3010
2994     C              **EXIT**                                         PRTA3020
2995     299  RETURN                                                     PRTA3991
2996          END                                                        PRTA3999
2997     C*************************************************************************
2998     C
2999     C       *****SUBROUTINE PRTH*****
3000     C   ***DESIGN DATA PRINT - TYPE H C-SEC/PIVOT DESIGN SUMMARY***
3001     C
3002     C*************************************************************************
3003     C
3004          SUBROUTINE PRTH                                            PRTH0010
3005     C                                                               PRTH0011
3006     C     BK PRT SUBR -- TYPE H                                     PRTH0020
3007     C            ***PRINT PIVOT OR C-SEC ANALYSIS DATA***           PRTH0030
3008     C                                                               PRTH0040
3009     C                                                               PRTH0170
3010     C                                                               PRTH0190
3011          COMMON T(2060),D(2060),CD(2000),ND(100),TM(500)            PRTH0200
3012          COMMON /MISC/ XMISC(100)                                   PRTH0201
3013     C                                                               PRTH0210
3014          DIMENSION TDC(200),TSC(120),TSS(100),DC(100),              PRTH0220
3015         1TWT(400),TSEC(300),TOGW(3),DGW(3),                         PRTH0221
3016         2R(16)                                                      PRTH0229
3017     C                                                               PRTH0230
3018     C                                                               PRTH0250
3019          EQUIVALENCE (TDC(1),T(1134)),(TSC(1),T(1534)),(TSS(1),T(1896)),PRTH0260
3020         1(DC(1),D(1401)),(TWT(1),CD(1101)),(TSEC(1),CD(1531)),      PRTH0261
3021         2(TOGW(1),D(1801)),(DGW(1),D(1102)),(DPNZ,T(20)),(DSAZ,T(21)),PRTH0262
3022         3(R(1),XMISC(85)),                                          PRTH0263
3023         8(IGW,ND(57)),(NODX,ND(58)),(IOP1,ND(82)),                  PRTH0268
3024         9(NCASE,ND(60)),(NPAGE,ND(85)),(N,ND(31))                   PRTH0269
3025     C                                                               PRTH0270
3026     C                                                               PRTH0320
3027     C                                                               PRTH0330
3028     C       TEST FOR TYPE OF PRINT ID=N                             PRTH0340
3029     C     C-SEC DATA ON N 1                                         PRTH0350
3030     C       PIVOT DATA PRINT ON N=2                                 PRTH0360
3031     C                                                               PRTH0370
3032      300  IF (N - ND(1)) 390,390,560                                PRTH0390
3033     C                                                               PRTH0400
3034     C                                                               PRTH0410
3035     C            ***C-SEC WT DATA***                                PRTH0420
3036     C              *TSS(I-54),TWT(33)-393)*                         PRTH0430
3037      390  N = ND(12)                                                PRTH0440
3038          I = IGW                                                    PRTH0441
3039          IND = 1
3040       500 WRITE(6,100)NCASE
3041       100 FORMAT(1HI,4HCASE,I4,82X,13H** PRTH - IP(I
3042     C
3043          IF(NODX - 1)501,501,505
3044     C
3045       501 IF(IGW - 21)490,492,490
3046     C
3047       490 WRITE(6,491)
3048       491 FORMAT(1H+,103X,6H30) **)
3049           GO TO 520
3050     C
3051       492 WRITE(6,502)
3052       502 FORMAT(1H+,103X,6H29) **)
```

CARD NO **** CONTENTS ****

```
3053            GO TO 520 ,
3054          C
3055            505 IF(IGW - 2)515,510,515
3056            510 WRITE(6,511)
3057            511 FORMAT(1H+,103X,6H27) **)
3058                GO TO 520
3059            515 WRITE(6,516)
3060            516 FORMAT(1H+,103X,6H28) **)
3061          C
3062            520 GO T ) (522,530),IND
3063          C
3064            522 WRITE (6,302)     N,IOGW(I),DGW(I),IGW,NODW,IOPI                PRTH0450
3065          C                                                                     PRTH0460
3066                WRITE (6,571)(R(I),I=1,16)                                      PRTH0470
3067                WRITE (6,391)                                                   PRTH0480
3068             391 FORMAT (5H0              -***-CENTER-SECTION DATA -- LB/AV-***-,PRTH0490
3069            1/6H0  TSS      -**-DETAIL WEIGHT DATA-**-  )                     PRTH0500
3070                DO 392 N=1,5M,9                                                 PRTH0510
3071                K = N + ND(8)                                                   PRTH0520
3072                WRITE (6,312)N,(TSS(I),I=N,K,1)                                 PRTH0530
3073          C                                                                     PRTH0531
3074             302  FORMAT (12X,        8H PANEL I2,13H DATA.  TOGW=F8.1,6H  DGW=F0.PRTH0535
3075            11,6H  IGW=I1,7H  NODW=I1,7H  IOPI=I1,4H  T=F0.5)                   PRTH0536
3076             312  FORMAT (3X,I3,9F11.4)                                        PRTH0540
3077          C                                                                     PRTH0549
3078             392  CONTINUE                                                     PRTH0550
3079          C                                                                     PRTH0560
3080                WRITE (6,393)                                                   PRTH0570
3081             393  FORMAT (6H0  TWT)                                           PRTH0580
3082                DO 394 N=331,393,9                                              PRTH0590
3083                K = N + ND(8)                                                   PRTH0600
3084                WRITE (6,312)N,(TWT(I),I=N,K,1)                                 PRTH0610
3085             394  CONTINUE                                                     PRTH0620
3086                GO TO 599                                                       PRTH0630
3087          C                                                                     PRTH0640
3088          C                                                                     PRTH0850
3089          C                                                                     PRTH0860
3090          C                                                                     PRTH0870
3091          C       PRINT CASE AND DESIGN POINT DATA HEADING                      PRTH0880
3092             560  N=IGW                                                        PRTH0890
3093                IND = 2
3094                GO TO 500
3095              930 WRITE (6,570)     IOGW(N),DGW(N),DPNZ,DNNZ                  PRTH0900
3096          C                                                                     PRTH0910
3097             570  FORMAT (21X,                  12H      TOGW=F8.1,6H  DGW=F8.1,8PRTH0920
3098            1H    +ND=F6.3,8H  -NZ=F6.3)                                      PRTH0930
3099          C                                                                     PRTH0940
3100                WRITE (6,571)(R(I),I=1,16)                                      PRTH0950
3101             571  FORMAT (1H0,8X,8A10,/10X,8A10)                              PRTH0960
3102          C                                                                     PRTH0970
3103          C       PRINT PIVOT DATA                                              PRTH0980
3104             579  WRITE           (6,561)                                      PRTH0990
3105             561  FORMAT (42H         PIVOT AND DELTA T.B. WT. SUMMARY/6H0  TSS) PRTH1000
3106             562  FORMAT (3X,I3,10F10.3)                                       PRTH1010
3107                DO 563 N=1,91,10                                                PRTH1020
3108                K=N+ND(8)                                                       PRTH1030
3109                WRITE           (6,562)N,(TSS(I),I=N,K,1)                       PRTH1040
3110             563  CONTINUE                                                     PRTH1050
3111          C       TWT REGION                                                    PRTH1060
3112                WRITE           (6,564)                                      PRTH1070
3113             564  FORMAT (6H0  TWT)                                           PRTH1080
3114                DO 565 N=1,91,10                                                PRTH1090
3115                K=N+ND(8)                                                       PRTH1100
3116                WRITE           (6,562)N,(TWT(I),I=N,K,1)                       PRTH1110
3117             565  CONTINUE                                                     PRTH1120
3118          C                                                                     PRTH1130
3119                WRITE           (6,566)                                      PRTH1140
3120                DO 566 N=331,391,10                                             PRTH1150
3121                K=N+ND(8)                                                       PRTH1160
3122                WRITE           (6,562)N,(TWT(I),I=N,K,1)                       PRTH1170
3123             566  CONTINUE                                                     PRTH1180
```

CARD NO	****	CONTENTS	****
3124	C		PRTHI190
3125	C		PRTHI200
3126	C		PRTHI700
3127	C EXIT		PRTHI800
3128	999 RETURN		PRTHI830
3129	END		PRTHI940

OVERLAY (10,0)

TORQUE-BOX STRUCTURAL SYNTHESIS/WEIGHT ANALYSIS
FOR METALLIC DESIGNS - NO. 2

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06/11/74        INPUT LISTING                    AUTOFLOW CHART SET - SWEEP    WING AND EMPENNAGE MODULE -

FORTRAN MODULE      (LIST,AUTOSEQ)

 CARD NO        ****                          CONTENTS                                    ****

      1         C*************************************************************************
      2         C
      3         C        *****PROGRAM OLAY10*****
      4         C   ***PROGRAM FOR FIFTH OVERLAY OF WING/EMPENNAGE MODULE***
      5         C        STRUCTURAL SYNTHESIS/WEIGHT ANALYSIS - METALLIC DESIGN NO 2
      6         C
      7         C*************************************************************************
      8         C
      9               PROGRAM OLAY10
     10         C
     11               COMMON T(7120)
     12         C
     13               COMMON /MISC/ XMISC(100)
     14         C
     15               REWIND 24
     16         C
     17               BUFFER IN(24,1)(T(1),T(7210))
     18         C
     19               IF(UNIT(24))10,10,10
     20         C
     21            10 CALL CNSTR
     22         C
     23               REWIND 24
     24         C
     25               BUFFER OUT(24,1)(T(1),T(7120))
     26         C
     27               IF(UNIT(24))20,20,20
     28         C
     29            20 CONTINUE
     30         C
     31               END
     32         C*************************************************************************
     33         C
     34         C        *****SUBROUTINE CNSTR*****
     35         C   ***TORQUE-BOX SYNTHESIS/WEIGHT ANALYSIS CONTROL***
     36         C
     37         C*************************************************************************
     38         C
     39               SUBROUTINE CNSTR                                          CNSR0010
     40         C       STRINGER ANALYSIS CONTROL PROGRAM                       CNSR0020
     41         C     ****REVISION--11-13-69--ADD C-SEC CONST. SECTION/LOAD LOOP. D(877)CNSR0030
     42         C               =CSID= 0.0 = LOOP ID FOR C-SEC ****             CNSR0040
     43         C     ****REVISION--03-13-69--KSEC(I) LOGIC.  SETUP FCMAX,FTMAX.****  CNSR0050
     44         C                 ADD EFF WIDTH FOR NX AND WT CALC.             CNSR0060
     45         C     REVISION -- 03-23-67 -- CHANGE NX(I) VS NX(I-1) LOGIC.  K=D(469)  CNSR0070
     46         C               ADD INPUT T.C. GEOMETRY AND NX LOGIC            CNSR0080
     47         C     REVISION -- 01-17-68 -- NEW FORMAT AND LINKAGES.          CNSR0090
     48         C                                                               CNSR0100
     49         C      SETUP CONTROLS FOR 11-SECTION/10-PANEL DESIGN            CNSR0110
     50         C                                                               CNSR0120
     51         C                                                               CNSR0140
     52               COMMON T(2060),D(2060),CD(2000),ND(100),TW(900)           CNSR0150
     53         C                                                               CNSR0160
     54               DIMENSION DC(100),TDC(200),TSC(420),TSS(100),TWT(400),TSEC(300),  CNSR0170
     55              1TC(340),TO(40),TT(24),DEL(30),                            CNSR0171
     56              2YSTRC(1),DJONT(1),DBLHD(1),DBKPT(5),                      CNSR0172
     57              3DKFCU(1),DKFTL(1),DNOU(1),DNXL(1),                        CNSR0173
     58              4SLCFS(5',34&,(2),                                         CNSR0174
     59              5DTT'@(12),                                                CNSR0175
     60              6YB'D(1),YBLD(1),YBUI(1),YBL(1),DEFF(1),DNX(1),            CNSR0176
     61              7TR'PI(1),TMAP(1),WFWP(1),NPNLS(1),TPNLW(1),TDCNT(1),      CNSR0177
     62              8D' SKU(1),DCSKL(1),CTSKU(1),DISKL(1),DCBST(1),DCNOS(1),   CNSR0178
     63              9D'LST(1),DCHST'(1),DLCFS(1),DLCRS(1),DNOL(1)              CNSR0179
     64         C                                                               CNSR0180
     65         C                                                               CNSR0190
     66         C                                                               CNSR0200
     67               EQUIVALENCE (DC(1),D(1401)),(TDC(1),T(1341)),(TSC(1),D(1541)),  CNSR0210
     68              1(TSS(1),T(1961)),(TWT(1),CD(1101)),(TSEC(1),CD(1501)),    CNSR0211
     69              2(TC(1),T(960)),(TO(1),T(920)),(TT(1),T(1317)),            CNSR0212
     70              3(YSTRC(1),TSEC(186)),                                     CNSR0213
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CARD NO   ****                          CONTENTS                                   ****
            4(DBKPT(1),D(475)),(DEL(1),THT(251)),(DYPVT,D(200)),          CNSR0214
            5(DLCVU,DEL(1)),(DLCVL,DEL(4)),(UCLFS,DEL(13)),(DCLRS,DEL(17)),  CNSR0215
            6(I,ND(29)),(K,ND(30)),(N,ND(31)),(IPA,ND(23)),(IPB,ND(24)),  CNSR0216
            7(IOPI,ND(74)),(IOPJ,ND(80)),(IOPI,ND(82)),                   CNSR0217
            8(IC,ND(48)),(ICD,ND(49)),(IVF,ND(51)),                       CNSR0218
            9(ISEC,ND(55)),(NODH,ND(56)),INCSEC,ND(68)),(IF4,ND(93))      CNSR0219
       C                                                                  CNSR0220
             EQUIVALENCE (CXXXI,D(74)),(SKMN,D(370)),(CHJOL,D(392)),      CNSR0230
            1(SHDCP(1),D(423)),(DBLHD(1),D(650)),(DJONT(1),D(651)),       CNSR0231
            2(DNXU(1),D(931)),(DIXL(1),D(942)),(DKFCU(1),D(639)),         CNSR0232
            3(DKFIL(1),D(1008)),(DOPTP,D(1399)),(SLCFS(1),D(1473)),       CNSR0233
            4(CBLHD,THT(200)),(CJONT,THT(201)),                           CNSR0234
            5(YBUI(1),TSEC(133)),(YBLI(1),TSEC(188)),(DXXI(1),T(723)),    CNSR0235
            6(YBUD(1),T(679)),(YBLD(1),T(690)),(DEFFI(1),T(800)),         CNSR0236
            8(WPNLS(1),T(645)),(TPNLW(1),T(656)),(TBCHT(1),T(789)),       CNSR0238
            9(TBWP1(1),T(745)),(THWP1(1),T(778)),(VFWP1(1),T(756))        CNSR0239
       C                                                                  CNSR0250
             EQUIVALENCE (DCSKU(1),D(721)),(DCSKL(1),D(732)),             CNSR0260
            1(DTSKU(1),D(743)),(DTSKL(1),D(754)),(DCDST(1),D(765)),       CNSR0261
            2(DCNDS(1),D(776)),(DCLST(1),D(787)),(DCHST(1),D(753)),       CNSR0262
            3(DLCFS(1),D(809)),(DLCRS(1),D(820)),(DJOL(1),D(831)),        CNSR0263
            4(TKXMN,TDC(64)),(TKXMX,TDC(65)),(TKMNL D(395)),(SKMNL,D(394)),  CNSR0264
            5(BMIN,D(380)),(STLMN,D(375)),(STLMX,D(376)),                 CNSR0265
            6(DTTRB(1),T(666)),                                           CNSR0266
            9(HSTMN,D(377)),(HSTMX,D(378))                                CNSR0269
       C                                                                  CNSR0270
       C                                                                  CNSR0280
       C                                                                  CNSR0400
       C     WT. CALC. ID=IC 1= AREA, 2=AREA AND PANEL WT.                CNSR0410
        2000 IC = ND(1)                                                   CNSR0420
       C                                                                  CNSR0430
       C                                                                  CNSR0440
       C          ***TEST FOR BASIC TYPE OR OPT BOX SEARCH. ID=IOPI***    CNSR0449
        1000 IF (NODH-ND(3)) 700,100,700                                  CNSR0450
        100  IF (ND(2) - IOPI) 101,103,700                                CNSR0460
       C                                                                  CNSR0470
       C                OPT TYPE. ID=3,4,5                                CNSR0471
        101  IF (IOPI - ND(3)) 102,102,104                                CNSR0480
       C                                                                  CNSR0489
       C          ***ID=3.CONST. B(STK) SEARCH***                         CNSR0490
        102  D(380) = TO(6)                                               CNSR0500
             D(381) = TO(6)                                               CNSR0510
             GO TO 700                                                    CNSR0520
       C                                                                  CNSR0529
       C          ***ID=2. CONST. NOS SEARCH***                           CNSR0530
        103  D(382) = TO(6)                                               CNSR0540
             GO TO 700                                                    CNSR0550
       C                                                                  CNSR0559
       C          **ID=4,5. VARIABLE NOS,B(STR). SETUP STATION DATA***    CNSR0560
        104  TT(1) =(TO(7) - TO(6))/TO(4)                                 CNSR0570
             TT(2) = TO(6) - YSTRC(1)*TT(1)                               CNSR0580
             K = IOPJ                                                     CNSR0590
             DO 105 I=1,K                                                 CNSR0595
             N = ND(12) - IOPJ                                            CNSR0600
             TT(I+13) =  YSTRC(N)*TT(1)+TT(2)                             CNSR0610
        105  CONTINUE                                                     CNSR0620
             TT(1) = (TO(9) - TO(8))/TO(5)                                CNSR0630
             N = ND(11) - IOPJ                                            CNSR0640
             TT(2) = TO(8)   YSTRC(N)*TT(1)                               CNSR0650
             N = IOPJ + ND(1)                                             CNSR0660
             DO 106 I=N,11                                                CNSR0670
             K = ND(12) - IOPJ                                            CNSR0680
             TT(I+13) = YSTRC(K)*TT(1) + TT(2)                            CNSR0690
        106  CONTINUE                                                     CNSR0700
       C                                                                  CNSR0709
       C                 TEST FOR 4 OR 5                                  CNSR0710
             IF (IOPI - ND(4)) 107,107,108                                CNSR0720
        107  DO 1070 I=1,11                                               CNSR0730
             DCNDS(I) = TT(I+13)                                          CNSR0740
        1070 CONTINUE                                                     CNSR0750
             GO TO 700                                                    CNSR0760
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CARD NO   ****                         CONTENTS                               ****
      100  DO 1080 I=1,11                                                  CNSR0770
           DCBST(I) = TT(I+13)                                             CNSR0780
      1080 CONTINUE                                                        CNSR0790
      C                                                                    CNSR0800
      C                                                                    CNSR0810
      C                                                                    CNSR0900
      C                                                                    CNSR0910
      C     STRINGER SPACING CONTROL                                       CNSR0920
      C    SECTION B - STRINGER CONTROL                                    CNSR0930
      C                                                                    CNSR0940
      C                                                                    CNSR0950
      C     TEST FOR ZERO V IN STWEB SUBR    USE (I-1) DATA AT SEC 2-11     CNSR0960
      C     USE MIN DATA AT TIP                                            CNSR0970
      C                                                                    CNSR0980
      C     MIN COVER LOAD= THG*100 PSI OR = NX(LWR)                       CNSR0990
      C     AT SEC(I) =2 TO 11,  FOR M(I)=0, -M(I) NOT ZERO, USE NX(LWR),FTMXCNSR1000
      C     FOR +M,-M (I)=0, USE LARGER OF   NX(LWR(I-1), KNXL(I)*(NX(I-1)  CNSR1010
      C                                                                    CNSR1020
      C     FOR M(I) NOT ZERO +NX(I) MUST BE LARGER THAN KNXL(I)*NX(I-1),NXL(CNSR1030
      C     I-1) OR NX(-M(I),FTMAX)                                        CNSR1040
      C              *** CLEAR GW(I) WEIGHT SECTION.  TWT(I) TO TWT(96) *** CNSR1050
      700  DO 701 I=1,153                                                  CNSR1060
           TWT(I)=DC(3)                                                    CNSR1070
      701  CONTINUE                                                        CNSR1080
      C                                                                    CNSR1090
      C            *****SETUP SECTION LOOP FOR 11 POINTS *****             CNSR1100
      C               USE ABS VALUE OF ULT. V AND M                        CNSR1110
      C               TEST FOR MAG. OF +NX(I) AND -NX(I)                   CNSR1120
      C               SETUP FCMAX(I) AND FCMAX(0)                          CNSR1130
      C                                                                    CNSR1140
           DO 799 ISEC=1,11                                                CNSR1150
      C                                                                    CNSR1159
      C            ***TEST FOR CSEC TYPE SKIP.  NCSEC=3 FOR CONST SEC/LDS*** CNSR1160
           IF (ND(2) - ISEC) 710,710,712                                   CNSR1170
      710  IF (ND(3) - NCSEC) 711,711,712                                  CNSR1180
      711  TDC(77) = TSEC(ISEC+44)                                         CNSR1190
      C                                                                    CNSR1200
           IC = ND(2)                                                      CNSR1210
           I = ND(12) - ISEC                                               CNSR1220
           CBLHD = DBLHD(I)                                                CNSR1230
           CJONT = DJONT(I)                                                CNSR1240
           GO TO 682                                                       CNSR1250
      C                                                                    CNSR1260
      C                                                                    CNSR1270
      712  TDC(55)=TDC(46)                                                 CNSR1280
      C                                                                    CNSR1289
      C     TEST FOR CONTROL DATA SETUP                                    CNSR1290
           TDC(200) = `C(3)                                                CNSR1300
           TDC(197) = CKNXL                                                CNSR1305
           IVF=ND(1)                                                       CNSR1310
           IF (ND(1) - ICD) 720,742,720                                    CNSR1315
      C                                                                    CNSR1316
      C            ***PROCESS INPUT DESIGN DATA***                         CNSR1317
      C              *SK(U,L), TSK(U,L), BSTR, NOS, L(MIN,MAX),H(MIN,MAX)* CNSR1318
      C              *K(NXL)*                                              CNSR1319
      720  N = ND(12) - ISEC                                               CNSR1320
           IF (DCSKU(N)) 722,722,721                                       CNSR1325
      721  TKOMN = DCSKU(N)                                                CNSR1330
           TKOMX = TKOMN                                                   CNSR1335
      722  IF (DCSKL(N)) 724,724,723                                       CNSR1340
      723  TKOML = DCSKL(N)                                                CNSR1345
      724  IF (DTSKU(N)) 726,726,725                                       CNSR1350
      725  SKMN = DTSKU(N)                                                 CNSR1351
      726  IF (DTSKL(N)) 728,728,727                                       CNSR1352
      727  SKMNL = DTSKL(N)                                                CNSR1353
      728  IF (DCBST(N)) 730,730,729                                       CNSR1354
      729  BMIN = DCBST(N)                                                 CNSR1355
      730  IF (DCNOS(N)) 732,732,731                                       CNSR1356
      731  TDC(200) = DCNOS(N)                                             CNSR1357
      732  IF (DCLST(N)) 734,734,733                                       CNSR1358
      733  STLMN = DCLST(N)                                                CNSR1359
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CARD NO	**** CONTENTS ****	
213	STLMX = STLMN	CNSR1360
214	734 IF (DCHST(N)) 736,736,735	CNSR1361
215	735 HSTMN = DCHST(N)	CNSR1362
216	HSTMX = HSTMN	CNSR1365
217	736 IF (DLCFS(N)) 738,738,737	CNSR1370
218	737 SWBCP(1) = DLCFS(N)	CNSR1375
219	738 IF (DLCRS(N)) 740,740,739	CNSR1380
220	739 SWBCP(2) = DLCRS(N)	CNSR1385
221	740 IF (DXNOL(N)) 742,742,741	CNSR1390
222	741 TDC(197) = DXNOL(N)	CNSR1395
223	C	CNSR1399
224	C ***U***	CNSR1400
225	742 TDC(80) = ABS (TSEC(ISEC))	CNSR1410
226	C	CNSR1419
227	C ***V***	CNSR1420
228	TDC(79) = ABS(TSEC(ISEC+111))	CNSR1430
229	C	CNSR1439
230	C ***D(AVE)***	CNSR1440
231	TDC(78)=TSEC(ISEC+55)	CNSR1450
232	C	CNSR1459
233	C ***W(STRUCT)***	CNSR1460
234	TDC(77)=TSEC(ISEC+44)	CNSR1470
235	C	CNSR1479
236	C ****VFS***	CNSR1480
237	TDC(75)=TSEC(ISEC+22)	CNSR1490
238	C	CNSR1499
239	C ****VRS***	CNSR1500
240	TDC(76)=TSEC(ISEC+33)	CNSR1510
241	C	CNSR1520
242	C *** SETUP EFF WIDTH FOR NX AND WT CALC. ***	CNSR1530
243	TSEC(240) = (SLCFS(1) + SLCFS(2))/TDC(77)	CNSR1540
244	TSEC(239) = SLCFS(5)*TSEC(240) + D(1)*(SWBCP(1)+SWBCP(2))/TDC(77)	CNSR1550
245	TSEC(240) = TSEC(240) + D(1)	CNSR1560
246	C	CNSR1570
247	C	CNSR1580
248	C	CNSR1590
249	C	CNSR1600
250	C	CNSR1610
251	C ***D(FS)***	CNSR1620
252	TDC(69) = TSEC(ISEC+77)	CNSR1630
253	C	CNSR1640
254	C ***D(RS)***	CNSR1650
255	TDC(70)=TSEC(ISEC+88)	CNSR1660
256	C	CNSR1670
257	C	CNSR1680
258	C ***EFFECTIVE DEPTH--D(EFF)***	CNSR1690
259	TDC(73) = TDC(78) - YBU(ISEC) - YBL(ISEC)	CNSR1700
260	IF (TDC(73) - D(1)) 743,744,744	CNSR1710
261	743 TDC(73)=(D(1)+TDC(78))/D(2)	CNSR1720
262	744 TDC(71) = TDC(77)*TDC(73)*TSEC(239)	CNSR1730
263	C	CNSR1740
264	C NNX(LWR), +NX(I), -NX(I), ZERO TESTS FOR +M(I), -M(I), MIN. NX	CNSR1750
265	C SETUP NX(I),+,-	CNSR1760
266	I = ND(12) - ISEC	CNSR1770
267	TDC(72) = DNXU(I)*TDC(80)/TDC(71)	CNSR1780
268	TDC(71)= ABS (TSEC(ISEC+121) /TDC(71))	CNSR1790
269	C	CNSR1800
270	C	CNSR1810
271	C TEST MAG OF +,-NX. TIP, SECT. 2 TO 11	CNSR1820
272	C	CNSR1830
273	IF (ISEC - ND(1)) 660,660,670	CNSR1840
274	C	CNSR1850
275	C ***TIP SECTION***	CNSR1860
276	660 IF (TDC(72)/SKNN - D(65)) 661,661,662	CNSR1870
277	661 TDC(72) = D(65)*SKNN	CNSR1880
278	662 IF (TDC(71)) 676,676,675	CNSR1890
279	C	CNSR1900
280	C	CNSR1910
281	C	CNSR1920
282	C	CNSR1930
283	C SECTIONS 2-11 SET IC=2 FOR WT CALC ID	CNSR1940

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CARD NO  ****                          CONTENTS                          ****
  284    C       (*,-NX(I)) * .0(NX(I-1))                                CNSR1950
  285     670  IC = ND(2)                                                 CNSR1960
  286    C                                                                CNSR1970
  287    C                                                                CNSR1980
  288    C                                                                CNSR1990
  289          TWT(164) = CKNX(I)*TWT(169)                               CNSR2000
  290          IF (TDC(71) - TWT(164)) 671,672,672                       CNSR2010
  291     671  TDC(71) = TWT(164)                                        CNSR2020
  292     672  IF (TDC(72)) 673,674,673                                  CNSR2030
  293     673  TWT(164) = CKNX(I)*TWT(170)                               CNSR2040
  294          IF (ABS (TDC(72)) - TWT(164)) 674,675,675                 CNSR2050
  295     674  TDC(72) = TWT(164)                                        CNSR2060
  296     675  TDC(161) = TDC(71)/TDC(72)                                CNSR2070
  297          IF (TDC(161)-TDC(197)) 676,676,678                        CNSR2080
  298     676  TDC(161) = TDC(197)                                       CNSR2090
  299          TDC(71) = DNXL(I)*TDC(72)/DNXU(I)*TDC(161)                CNSR2100
  300    C                                                               CNSR2108
  301    C       *** SETUP MAX FC(I), FT(I), DATA ***                    CNSR2109
  302     678  I = ND(12) - ISEC                                         CNSR2110
  303          TDC(46) = DKFCU(I)*TSEC(234)                              CNSR2111
  304          TDC(60) = DKFTL(I)*TSEC(235)                              CNSR2115
  305          TDC(1a21= DKFTL(I)*TSEC(238)                              CNSR2116
  306          TDC(49) = DKFCU(I)*TSEC(236)                              CNSR2120
  307          TDC(48) = TDC(49)/TDC(46)                                 CNSR2121
  308          TDC(48) = TSEC(237)                                       CNSR2125
  309          TDC(55) = TDC(46)                                         CNSR212E
  310          IF (TDC(72)*TDC(48) - TDC(71)) 679,679,680                CNSR2130
  311     679  TDC(55) = TDC(72)*TDC(49)/TDC(71)                        CNSR2140
  312     680  CALL SS (TDC(55))                                         CNSR2150
  313          TDC(56)=TDC(45)                                           CNSR216
  314    C                                                               CNSR2170
  315    C     TVF (REQD)                                                CNSR2180
  316          TDC(74) = TSEC(ISEC+66)                                   CNSR2190
  317    C                                                               CNSR2200
  318    C                                                               CNSR2210
  319    C       DO SECTION DESIGN IVF=1 --(ST)                          CNSR2220
  320    C       1. UPR COVER      2. LWR COVER                          CNSR2230
  321    C       3. F.SPAR, R. SPAR                                      CNSR2240
  322    C                                                               CNSR2250
  323     681  CALL SECTD                                                CNSR2260
  324    C                                                               CNSR2270
  325    C                                                               CNSR2280
  326    C                                                               CNSR2320
  327    C                                                               CNSR2460
  328    C       COMPUTE EI,GJ ---  STRUCTURE REQD --                    CNSR2470
  329    C         IEIGJ= 1                                              CNSR2480
  330     682  CALL EIGJC                                                CNSR2490
  331    C                                                               CNSR2500
  332    C     GJ(I) IN TSS(7), EI(I) IN TSS(8)                          CNSR2510
  333    C     TEST FOR GJVF(REQD) AND TYPE OF ANALYSIS                  CNSR2520
  334     683  IF (TDC(74)) 780,780,684                                  CNSR2530
  335    C                                                               CNSR2540
  336    C     VFCAL SUBR SETS UP IEIGJ ID IF  DELTA VF NOT 0.0          CNSR2550
  337    C      1=NO CALC  2= CALC. COMPOSITE EI/GJ.(PRT8, PRTC TEST FOR PRINT) CNSR2560
  338    C                                                               CNSR2570
  339     684  CALL VFCAL                                                CNSR2580
  340    C                                                               CNSR2590
  341    C       TEST FOR REDESIGN FOR VF AND COMPOSITE EIGJ             CNSR2600
  342    C       DO IF IVF=2.  EI,GJ= STRUCT. IF IVF=1,3                 CNSR2610
  343          IF (IVF - ND(2)) 780,685,780                              CNSR2620
  344     685  CALL SECTD                                                CNSR2630
  345     686  CALL EIGJC                                                CNSR2640
  346    C                                                               CNSR2650
  347    C              TYPE 8 PAGE PRINT ONLY ON NOPW=4,1 FOR OPT SEARCH CASE.CNSR2659
  348     687  IF (ND(2) - IOP1) 688,688,780                             CNSR2660
  349     688  IF (NODW - ND(3)) 689,790,78u                             CNSR2661
  350     689  IF (NODW - ND(1)) 780,780,790                             CNSR2662
  351    C                                                               CNSR2670
  352    C      TEST FOR TYPE 8 PAGE PRINT -- DETAIL DATA AT SEC(ISEC), ID=1 CNSR2680
  353     780  IF (IP8) 790,790,7870                                     CNSR2690
  354    C                                                               CNSR2699
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CARD NO   ****                    CONTENTS                              ****
      C        *** TEST FOR C-SEC TYPE. SEC 11 ONLY. ***                CNSR2700
       707  IF (ND(2) - ISEC) 7070,7070,7071                            CNSR2710
       7070 IF (NCSEC - ND(1)) 7071,7071,780                            CNSR2720
       7071 CALL PRTB                                                   CNSR2730
      C                                                                 CNSR2740
      C       DO WT CALC. IC=1 OR 2                                     CNSR2750
       780  CALL WTCAL                                                  CNSR2755
      C                                                                 CNSR2756
      C             ***SAVE SECTION SUMMARIES CALC BY WTCAL AND WTPIN***    CNSR2756
      C               *PNL(I) WTS FOR PRINT-TYPE A .  PNLS 1-10, ISEC=2-11*  CNSR2757
      C               *STORED BY PANELS-8/PNL-SUM,TB,LE,TE,MISC,WF*     CNSR2757
      C               *PNLS IN CD(142-201) STORED RT-TIP*               CNSR2757
      C               *CUM TOTAL IN CD(134-138).  CD(140)=RT RIB, CD(141)=CSECCNSR2757
      C               *ALL WTS=LB/SIDE*                                 CNSR2757
            IF (ND(2) - ISEC) 7⸱⸱0,7900,7902                             CNSR2756
       7900 K = (ND(12) - ISEC)*ND(6)                                   CNSR2756
            DO 7901 I=1,6                                               C⸱ SR2756
            K = K + ND(1)                                               CNSR2756
            CD(K+135) = TWT(I+58)                                       CNSR2756
       7901 CONTINUE                                                    CNSR2756
      C                                                                 CNSR2756
      C               *SECTION CHORDWISE COMP DATA--TWT(381-391)*       CNSR2757
       7902 K = (ND(12) - ISEC)*ND(11) - ND(11)                         CNSR2757
            DO 7903 I=1,11                                              CNSR2757
            K = K + ND(1)                                               CNSR2757
            TC(K+218) = TWT(I+380)                                      CNSR2757
       7903 CONTINUE                                                    CNSR2757
      C                                                                 CNSR2757
      C                                                                 CNSR2758
      C               *SET TWT(44)=B(SPACING) FOR SECT J SEARCH PARAM. INDIC.*CNSR2759
            TWT(44) = TDC(82)                                           CNSR2760
      C                                                                 CNSR2761
      C             ***TEST FOR SECTION J DATA SAVE. IOPI=2,3,4,5***    CNSR2762
      C               *SAVE TWT(1-100) IN TW(701-800) FOR TSS(1-100) PROCESS**CNSR2762
       7910 IF (ND(12) - ISEC - IOPJ) 795,7911,795                      CNSR2763
       7911 DO 7915 I=1,100                                             CNSR2764
            TW(I+700) = TWT(I)                                          CNSR2764
       7915 CONTINUE                                                    CNSR2764
      C                                                                 CNSR2764
      C             ***SET N=2 FOR LOOP CONTROL***                      CNSR2764
            N=ND(2)                                                     CNSR2765
            GO TO 796                                                   CNSR2766
      C                                                                 CNSR2766
      C             **F⸱TURN FROM SUM.**                                CNSR2767
      C              *TW(801-900)=SECT(J) WT DATA FOR PRTA PRINT FROM TSS LOCCNSR2767
      C              *SAVE TWT(1-71),(97-120),(145-149)*                CNSR2767
       7912 DO 7916 I=1,71                                              CNSR2769
            TW(I+800) = TWT(I)                                          CNSR2770
       7916 CONTINUE                                                    CNSR2771
            DO 7917 I=1,24                                              CNSR2772
            TW(I+871) = TWT(I+96)                                       CNSR2773
       7917 CONTINUE                                                    CNSR2774
            DO 7918 I=1,5                                               CNSR2775
            TW(I+895) = TWT(I+144)                                      CNSR2776
       7918 CONTINUE                                                    CNSR2777
      C                                                                 CNSR2778
      C            ***RESET BASIC TWT(1-100) DATA FROM TW(701-800)***   CNSR2779
            DO 7919 I=1,100                                             CNSR2780
            TWT(I) = TW(I+700)                                          CNSR2781
       7919 CONTINUE                                                    CNSR2782
      C                                                                 CNSR2783
      C                                                                 CNSR2788
      C        SET N=1 FOR OPNL DATA                                    CNSR2810
      C        *** TEST FOR C-SEC CALC. SEC 11 ONLY UNLESS BLKD OR JOINT    CNSR2820
      C                 ARE CALC. ***                                   CNSR2830
       795 N=ND(1)                                                      CNSR2840
            IF (ND(2) - ISEC) 7991,7991,7994                            CNSR2850
       7991 IF (ND(2) - NCSEC) 7992,798, 7994                           CNSR2860
       7992 IF (CJONT) 7994,7993,7994                                   CNSR2870
       7993 IF (CBLKD) 7994,798,7994                                    CNSR2880
      C                                                                 CNSR2888
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CARD NO	**** CONTENTS ****	
426	C TEST FOR PRTC PRINT.	CWSR2810
427	7994 IF (IPR) 799,799,7995	CWSR2820
428	C	CWSR2830
429	7995 CALL PRTC	CWSR2840
430	C	CWSR2900
431	C RETURN LOOP FOR ISEC	CWSR2910
432	799 CONTINUE	CWSR2920
433	C	CWSR2928
434	C ***PROCESS FINAL MTS. ADD INBD PYL(0) DATA, SETUP SUMS***	CWSR2929
435	8900 TWT(1) = TWT(1) + TWT(56)	CWSR2930
436	TWT(30) = TWT(30) + DTIRD(1)	CWSR2935
437	DO 8901 I=1,5	CWSR2940
438	TWT(I+44) = TWT(I+44) + TWT(I+54)	CWSR2945
439	CD(I+133) = TWT(I+44)	CWSR2950
440	8901 CONTINUE	CWSR2955
441	C	CWSR2960
442	CD(139) = TWT(52)	CWSR2965
443	CD(140) = TWT(54)	CWSR2970
444	TWT(48) = TWT(48) + TWT(55)	CWSR2975
445	TWT(49) = TWT(49) + TWT(55)	CWSR2980
446	C ***SET N=1 FOR END OF ISEC LOOP TEST***	CWSR2989
447	N = ND(1)	CWSR2990
448	C	CWSR3000
449	C	CWSR3110
450	C	CWSR3110
451	C SUM DELTA WF INTO ELEMENTS MTS	CWSR3120
452	C UPPER COVER	CWSR3130
453	796 TWT(9) = DLCVU*TWT(9) + TWT(19)	CWSR3140
454	TWT(10) = DLCVU*TWT(10) + TWT(20)	CWSR3150
455	TWT(11) = DLCVU*TWT(11) + TWT(21)	CWSR3160
456	TWT(2) = TWT(9) + TWT(10) + TWT(11)	CWSR3170
457	C	CWSR3180
458	C LOWER COVER	CWSR3190
459	TWT(12) = DLCVL*TWT(12) + TWT(22)	CWSR3200
460	TWT(13) = DLCVL*TWT(13) + TWT(23)	CWSR3210
461	TWT(14) = DLCVL*TWT(14) + TWT(24)	CWSR3220
462	TWT(3) = TWT(12)+ TWT(13) + TWT(14)	CWSR3230
463	C	CWSR3240
464	C I-RIBS	CWSR3250
465	TWT(5) = TWT(5) + TWT(25)	CWSR3260
466	C	CWSR3270
467	C TORQUE-BOX MISC.	CWSR3280
468	TWT(8) = TWT(8) + TWT(28) + TWT(29)	CWSR3290
469	C	CWSR3300
470	C FRONT SPAR	CWSR3310
471	TWT(15) = DELFS*TWT(15)	CWSR3320
472	TWT(16) = DELFS*TWT(16) + TWT(26)	CWSR3330
473	TWT(6) = TWT(16)+ TWT(15)	CWSR3340
474	C	CWSR3350
475	C REAR SPAR	CWSR3360
476	TWT(17) = DELRS*TWT(17)	CWSR3370
477	TWT(18) = DELRS*TWT(18) + TWT(27)	CWSR3380
478	TWT(7) = TWT(18)+ TWT(17)	CWSR3390
479	C	CWSR3400
480	C *****SECT (J) DATA, N=2. END OF ISEC LOOP, N=1.*****	CWSR3409
481	IF (N-ND(1)) 810,810,7912	CWSR3410
482	C	CWSR3411
483	C ***RESET SECTION J DATA***	CWSR3412
484	C *STORED IN TW(801-900)--FROM CWSTR MOVE*	CWSR3413
485	810 DO 8100 I=1,100	CWSR3414
486	TSS(I) = TWT(I+800)	CWSR3415
487	8100 CONTINUE	CWSR3416
488	C	CWSR3419
489	C **TEST FOR TYPE OF SEARCH AND PASS NO. FOR EXIT LOGIC**	CWSR3420
490	IF (ND(2) - IOP(1) 811,811,899	CWSR3430
491	811 IF (NOOM - ND(3)) 899,812,899	CWSR3440
492	C	CWSR3450
493	C	CWSR3458
494	C ***DISCRETE POINT SEARCH. NOOM=3, SAVE DESIGN DATA***	CWSR3460
495	C *RCD M, RCDS N TO N+9*	CWSR3470
496	812 TO(1) = TWT(1)	CWSR3480

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CARD NO   ****                    CONTENTS                         ****
              TO(3) = TSS(1)                                       CNSR3490
              TO(2) = TO(1) - TO(3)                                CNSR3500
        C                                                          CNSR3510
        C             TEST IF PASS HAS OPT.                        CNSR3520
              IF (IOPT - ND(5)) 813,813,899                        CNSR3530
        C                                                          CNSR3538
        C            *RCD 118-142.  5 BLOCKS OF DATA, 5 RCDS EACH*  CNSR3540
        C            *BLOCK(N) BASED ON VALUE OF IOPT*             CNSR3541
        C            *RCD(1) OF BLOCK(N)=MISC DATA.  WRITE FROM TSC(1-150)*  CNSR3542
        C            *RCD(2) OF BLOCK(N)=TWT(1-150)*               CNSR3543
        C            *RCD(3) OF BLOCK(N)=TSS(1-100)*               CNSR3544
        C            *RCD(4) OF BLOCK(N)=TC(1-340)*                CNSR3545
        C            *RCD(5) OF BLOCK(N)=CD(1-400)*                CNSR3548
        C                                                          CNSR3549
         813  N = IOPT*ND(5) + 113                                 CNSR3550
        C                                                          CNSR3558
        C            *SETUP TSC(1-150)*                            CNSR3559
              DO 8130 I=1,5                                        CNSR3560
              TSC(I) = TO(I)                                       CNSR3561
              TSC(I+5) = TO(I+17)                                  CNSR3562
         8130 CONTINUE                                             CNSR3568
        C                                                          CNSR3569
              TSC(11) = D(375)                                     CNSR3570
              TSC(12) = D(376)                                     CNSR3571
              TSC(13) = D(380)                                     CNSR3572
              TSC(14) = D(381)                                     CNSR3573
              TSC(15) = D(382)                                     CNSR3574
        C                                                          CNSR3579
              DO 8131 I=1,11                                       CNSR3580
              TSC(I+15) = TBWPI(I)                                 CNSR3582
              TSC(I+26) = THWPI(I)                                 CNSR358
              TSC(I+37) = VFWPI(I)                                 CNSR3586
              TSC(I+48) = WPNLS(I)                                 CNSR3588
              TSC(I+59) = TPNLW(I)                                 CNSR3590
              TSC(I+70) = TBCWT(I)                                 CNSR3592
              TSC(I+81) = DEFFI(I)                                 CNSR3594
              TSC(I+92) = YBUD(I)                                  CNSR3596
              TSC(I+103) = YBLD(I)                                 CNSR3598
              TSC(I+114) = DCBST(I)                                CNSR3600
              TSC(I+125) = DCNOS(I)                                CNSR3602
              TSC(I+136) = DNX(I)(I)                               CNSR3610
         8131 CONTINUE                                             CNSR3620
        C                                                          CNSR3630
        C           ***WRITE 5 RCDS***                             CNSR3640
              IF4 = N                                              CNSR3650
              CALL WRITMS (1,TSC(1),150,IF4)                       CNSR3660
              IF4 = N + ND(1)                                      CNSR3670
              CALL WRITMS (1,TWT(1),150,IF4)                       CNSR3675
              IF4 = N + ND(2)                                      CNSR3680
              CALL WRITMS (1,TSS(1),100,IF4)                       CNSR3685
              IF4 = N + ND(3)                                      CNSR3690
              CALL WRITMS (1,TC(1),340,IF4)                        CNSR3695
              IF4 = N + ND(4)                                      CNSR3700
              CALL WRITMS (1,CD(1),400,IF4)                        CNSR3705
        C                                                          CNSR3710
        C                                                          CNSR3720
        C                                                          CNSR9900
        C           **EXIT**                                       CNSR9910
         899  RETURN                                               CNSR9990
              END                                                  CNSR9999
        C**********************************************************************
        C
        C      *****SUBROUTINE SECTO*****
        C   ***TORQUE-BOX SECTION SYNTHESIS - SEARCH LEVEL I CONTROL***
        C
        C**********************************************************************
        C
              SUBROUTINE SECTO                                     SECT0010
        C                                                          SECT0011
        C           SECTION ANALYSIS SUBR---STR---                 SECT0020
        C                                                          SECT0030
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CARD NO	**** CONTENTS ****	
568	C	SECT0110
569	C	SECT0130
570	COMMON T(2060),D(2060),CD(2000),ND(100)	SECT0140
571	C	SECT0150
572	DIMENSION DC(100),TDC(200),TSC(420),TSS(100),THT(400),TSEC(300),	SECT0160
573	1DEL(30),	SECT0161
574	2DJOINT(11),DELHD(11),	SECT0162
575	3YBUD(11),YOLD(11),DXBU(11),DXOL(11),	SECT0163
576	9DCRST(11),DR15(4)	SECT0169
577	C	SECT0170
578	C	SECT0180
579	EQUIVALENCE (DC(1),D(1401)),(TDC(1),T(1134)),(TSC(1),T(1154)),	SECT0190
580	1(TSS(1),T(1196)),(THT(1),CD(1101)),(TSEC(1),CD(1501)),	SECT0191
581	2(PI,D(15)),(VTID,D(20)),(TANTH,TDC(19)),	SECT0192
582	3(DELHD(1),D(650)),(DJOINT(1),D(669)),(DRIS(1),D(1475)),	SECT0193
583	4(DXBU(1),D(33)),(DXOL(1),D(54)),(DCREST(1),D(705)),	SECT0194
584	5(STIFN,D(36)),(SKIN,D(37)),(STRMN,D(371)),(HGT(1),D(372)),	SECT0195
585	6(STMX,D(378)),(STFMX,D(379)),(BMIN,D(380)),(BMAX,D(381)),	SECT0196
586	7(SNMIN,D(382)),(STFMI,D(384)),(SKMAX,D(383)),(TRMAX,D(385)),	SECT0197
587	8(CNSID,D(465)),(DTC,D(467)),(DTCI,D(468)),(CONTC,D(367)),	SECT0198
588	9(YBUD(1),T(679)),(YOLD(1),T(680))	SECT0199
589	C	SECT0200
590	EQUIVALENCE (DEL(1),THT(251)),(DLSKU,DEL(2)),(DLSKL,DEL(5)),	SECT0210
591	1(DLFSH,DEL(15)),(DLRSH,DEL(19)),	SECT0211
592	2(CJONT,THT(201)),(CBLHD,THT(200)),	SECT0212
593	5(IB,ND(52)),(IVF,ND(51)),(IDVF,ND(50)),	SECT0215
594	6(IBT,ND(72)),(IMX,ND(71)),	SECT0216
595	7(ICD,ND(49)),(ISC,ND(22)),	SECT0217
596	8(NEB,ND(37)),(IBSEC,ND(69)),(IKI,ND(62)),	SECT0218
597	9(ISEC,ND(55)),(I,ND(29))	SECT0219
598	C	SECT0420
599	C	SECT0430
600	C	SECT0440
601	C **** SETUP CJONT AND CBLHS ****	SECT0450
602	7000 I = ND(12) - ISEC	SECT0460
603	C	SECT0470
604	CBLHD = DELHD(I)	SECT0480
605	CJONT = DJONT(I)	SECT0490
606	C	SECT0500
607	C	SECT0510
608	C TEST FOR TYPE OF ANALYSIS ON IVF 1,3=ST., 2=WF	SECT0520
609	C	SECT0530
610	IF (IVF - ND(2)) 700,400,700	SECT0540
611	C	SECT0550
612	C STRENGTH REGNT ANALYSIS -- UPR-LWR COVERS, FRONT-REAR SPARS	SECT0560
613	C NO. OF STRINGER (BMIN,MAX) CONTROL -- BMAX AND NOSMIN ADJ. LIMITS	SECT0570
614	C COMPUTE NOSMIN SEC(I) -- USE LARGER OF SNMIN OR NOS(BMAX)	SECT0580
615	700 IB = ND(1)	SECT0590
616	TDC(198)=SNMIN	SECT0600
617	TDC(199)=(TDC(77)/BMAX)-D(1)	SECT0610
618	TDC(199)=INT (TDC(199))	SECT0620
619	IF (TDC(198)-TDC(199)) 7051,7052,7052	SECT0630
620	7051 TDC(198)=TDC(199)	SECT0640
621	C	SECT0649
622	C START IB+1, FCSTART=FCMAX	SECT0650
623	7052 TDC(195)=TDC(55)	SECT0660
624	C	SECT0669
625	C OPT SEARCH OR CONTROL	SECT0670
626	C TEST INPUT CONTROL DATA. FOR ID=1 ROOT TO TIP	SECT0680
627	C FOR ID=2,3 CONTROL DATA ONLY AT JOINTS	SECT0690
628	C	SECT0700
629	C SPECIAL CONTROL LOGIC -- TEST FOR D(367)=-2,+2	SECT0710
630	9000 IF (D(1) - CONTC) 9001,9010,9010	SECT0720
631	C CONTROL WITH INPUT BLOCK -- ICD = 2	SECT0730
632	9001 IDVF=ND(1)	SECT0740
633	TDC(68) = TDC(77)/BMIN - D(1)	SECT0750
634	IF (ISC - ND(2)) 705,9002,706	SECT0760
635	9002 IF (TDC(200)) 7060,7060,9003	SECT0770
636	9003 TDC(198) = TDC(200)	SECT0780
637	GO TO 7060	SECT0790
638	C CONTROL WITH NO INPUT BLOCK -- ICD = 1	SECT0800

CARD NO	**** CONTENTS	****
839	9010 IF (ND(2) - ISC) 9011,9011,702	SECT0810
840	9011 IF (CONTC) 9012,703,703	SECT0820
841	9012 IF (ISEC - ND(2)) 7020,704,704	SECT0830
842	C	SECT0840
843	702 IF (ISEC -ND(1)) 7020,7020,7021	SECT0850
844	C	SECT0859
845	C SECTION 1, TIP -- SETUP ID	SECT0860
846	7020 ID=ND(1)	SECT0870
847	C	SECT0879
848	C SETUP NDS MIN-MAX FOR OPT SEARCH =F(BMIN) AND SNMIN BMAX	SECT0880
849	7021 TDC(68) =(TDC(77)/BMIN)-D(1)	SECT0890
850	TDC(68) =INT (TDC(68))	SECT0900
851	IDVF=ND(1)	SECT0910
852	7023 IF (ICD - ND(2)) 7022,705,7022	SECT0920
853	C	SECT0929
854	C NO INPUT CONTROLS	SECT0930
855	7022 IF (TDC(60) - TDC(198)) 7060,7061,7061	SECT0940
856	C	SECT0950
857	7060 TDC(68) = TDC(198)	SECT0960
858	GO TO 7061	SECT0970
859	C	SECT0980
860	C INPUT CONTROLS -- TEST FOR BMIN, NDS	SECT0990
861	705 IF (IDC(200)) 7022,7022,7053	SECT1000
862	C	SECT1009
863	C INPUT NDS, TEST INPUT B	SECT1010
864	7053 TDC(198)=TDC(200)	SECT1020
865	C	SECT1029
866	C TEST FOR INPUT BSTR = 0	SECT1030
867	IF (DCBST(ISEC)) 7022,7022,7055	SECT1040
868	C	SECT1050
869	C INPUT NDS AND BSTR -- USE LARGE OF NDSMIN, NDS(B) --NO SEARCH	SECT1060
870	7055 IF (TDC(68)-TDC(198)) 7060,7061,7061	SECT1070
871	C	SECT1080
872	C INPUT CONTROL FOR CONSTANT NDS OR BSTR OPT SEARCH AT SECT. 1,2	SECT1090
873	C AND AT INDICATED JOINTS --- IB=1 FCSTART= FCMAX AT JOINTS	SECT1100
874	703 IF (ISEC -ND(2)) 7021,7021,7031	SECT1110
875	C	SECT1120
876	C SEC 3 TO 11 -- TEST FOR JOINT(I), IF NOT 0, OPT SEARCH	SECT1130
877	7031 IF (CJOINT) 704,704,7021	SECT1140
878	C	SECT1150
879	C CONSTANT NDS OR BSTR TEST AT SECTION(I) --IB=1, FCSTART=FCMAX I-1	SECT1160
880	704 IF (ISC - ND(3)) 7032,7040,7032	SECT1170
881	C	SECT1180
882	C USE (NDS(I-1)), NO LIMIT ON STR SPACING MIN OR MAX	SECT1190
883	7032 TDC(60)=TD (81)	SECT1200
884	IDVF=ND(2)	SECT1210
885	GO TO 706	SECT1220
886	C	SECT1230
887	C CONSTANT BSTR B(I)=B(I-1), ST. AND VF IDVF=3	SECT1240
888	C NDS(I) WILL NOT BE WHOLE INTEGER	SECT1250
889	7040 TDC(68)=(TDC(77)/TDC(82)) -D(1)	SECT1260
890	IDVF = ND(3)	SECT1270
891	IF (TDC(68)) 7041,706,706	SECT1280
892	7041 TDC(68)=DC(3)	SECT1290
893	706 TDC(198)=TDC(68)	SECT1300
894	C	SECT1310
895	C SETUP (B/T) LIMIT DATA - AIKSKMX), LMIN, LMAX	SECT1320
896	7061 TWT(305)= HSTMN*TSEC(224) + STFMN*TSEC(223)	SECT1330
897	TWT(306) = HSTMX + STFMX*STRFN	SECT1340
898	TWT(304) = STRMN*TWT(308)	SECT1350
899	TWT(302) = TSEC(223)*STFMN/D(19)	SECT1360
900	C	SECT1369
901	C B/T -- MIN, MAX, CONTROL	SECT1370
902	TWT(308) = HSTMN/STRMN	SECT1380
903	TWT(309) = HSTMX/STRMN	SECT1390
904	TWT(307) = TWT(309)	SECT1400
905	C	SECT1409
906	C B/T(F)	SECT1410
907	TWT(310) = DC(3)	SECT1420
908	TWT(311) = DC(3)	SECT1430
909	IF (D(1) - STRFN) 7063,7065,7067	SECT1440

CARD NO	**** CONTENTS ****	
710	7063 TWT(311) = SIFMX/STRMN	SECT1450
711	C	SECT1459
712	C Z(2) TYPE. INTERM. ID. 1=H, 2=F FOR LWR B/T	SECT1460
713	IB*=ND(1)	SECT1470
714	IF (TWT(311) - TWT(309)*TSEC(221)) 7064,7065,7065	SECT1480
715	7064 IB1=ND(2)	SECT1490
716	C	SECT1499
717	C Z(1), Z(2). MAX B/T ID. 1=H, 2=F	SECT1500
718	7065 TWT(310) = SIFMX/STRMN	SECT1510
719	IMX = ND(1)	SECT1520
720	TWT(303) = HSTMN * STRFN*SIFMX	SECT1530
721	IF (TWT(309)*TSEC(221) - TWT(310)) 7066,7067,7067	SECT1540
722	7066 IMX = ND(2)	SECT1550
723	TWT(307) = TWT(310)/TSEC(221)	SECT1560
724	C	SECT1569
725	C MIN STR AREA FOR MIN GEOMETRY, MAX(A)	SECT1570
726	7067 TDC(15) = STR2(TWT(309) * TSEC(225)	SECT1580
727	TWT(304)*STRMN*TWT(306) * TSEC(205)	SECT1590
728	C	SECT1600
729	C FC(START) = FCMAX(1)	SECT1610
730	7068 TDC(195) = TDC(56)	SECT1620
731	TDC(193)=TDC(72)*TKMIN/SKMN	SECT1630
732	C	SECT1640
733	C SETUP STARTING NOS	SECT1650
734	7070 TDC(81)=TDC(68)	SECT1660
735	CALL SFSCH (TDC(68))	SECT1670
736	C	SECT1679
737	C SAVE BI DATA IN BI-1 LOC.	SECT1680
738	707 DO 708 I=1,40	SECT1690
739	TSC(I+80) = TSC(I)	SECT1700
740	708 CONTINUE	SECT1710
741	C	SECT1719
742	C TEST WITH MIN NOS	SECT1720
743	IF (TSC(1) - TDC(190)) 712,712,7090	SECT1730
744	7090 IB=ND(2)	SECT1740
745	TSC(1) =(TSC(81)-D(1))	SECT1750
746	IF (TSC(1)) 712,712,709	SECT1760
747	C	SECT1769
748	C DO BINI	SECT1770
749	709 CALL SFSCH (TSC(1))	SECT1780
750	IF(TSC(83)) TSC(61) 712,710,707	SECT1790
751	710 IF (TSC(114) TSC(34)) 711,711,712	SECT1800
752	C	SECT1809
753	C USE BI DATA, MOVE TO OPT LOC N+80	SECT1810
754	711 DO 713 I=1,40	SECT1820
755	TSC(I+80) = TSC(I)	SECT1830
756	713 CONTINUE	SECT1840
757	C	SECT1850
758	C USE BI-1 DATA	SECT1860
759	C MOVE TO KOPT LOC	SECT1870
760	712 DO 714 I=1,40	SECT1880
761	TDC(I+80) = TSC(I+80)	SECT1890
762	714 CONTINUE	SECT1900
763	C	SECT1909
764	C SAVE Y-BAR FOR NEXT PASS	SECT1910
765	YBUD(ISEC) = TDC(109)	SECT1920
766	C	SECT1930
767	C SETUP TSK*DELTA SKU	SECT1940
768	TWT(150)=SKMN	SECT1950
769	IF (SKMN-TDC(114)) 7120,760,760	SECT1960
770	7120 TWT(150)=TDC(114)*DLSKU	SECT1970
771	C	SECT1980
772	C *** SETUP T(BAR) CORRECTION FACTORS FOR LOWER COVER ***	SECT1990
773	760 TSEC(244) = DC(3)	SECT2000
774	TSEC(243) = DRIS(1)	SECT2010
775	IF (D(2) - STRFN) 7601,7601,7604	SECT2020
776	7601 IF (CMSID) 7602,7603,7602	SECT2030
777	7602 TSEC(243) = DRIS(2)	SECT2040
778	IF (CMSID - D(2)) 7603,7603,7604	SECT2050
779	7603 TSEC(244) = TDC(81)	SECT2060
780	7604 TSEC(242) = TDC(77)*TSEC(239)	SECT2070

```
CARD NO  ****                          CONTENTS                          ****
  781          TSEC(244) = TSEC(242)/(TSEC(242)-TSEC(244)*TSEC(243)-D(2)*GRISI3))SECT2080
  782    C                                                                SECT2090
  783    C                                                                SECT2100
  784    C          *** SAVE EFF WT FACTORS ***                           SECT2110
  785          TSEC(241) = TSEC(232)                                      SECT2120
  786          TSEC(242) = TSEC(240)                                      SECT2130
  787          TSEC(243) = TSEC(232)                                      SECT2140
  788    C                                                                SECT2150
  789    C                                                                SECT2160
  790    C                                                                SECT2170
  791    C     MOVE DATA FOR TO FINAL LOC                                 SECT2180
  792    C       SAVE F(L) -- UPPER COVER                                 SECT2190
  793          TDC(103) = TDC(105)                                        SECT2200
  794          TDC(160) = TDC(107)                                        SECT2210
  795          TDC(105) =TDC(110)                                         SECT2220
  796          TDC(107) =TDC(111)                                         SECT2230
  797          TDC(109) =TDC(112)                                         SECT2240
  798    C                                                                SECT2250
  799    C                                                                SECT2260
  800    C     TEST FOR VERTICAL TAIL -- T(UPR)=T(LWR)                    SECT2270
  801     7600 IF (VTID) 7610,7610,761                                    SECT2280
  802    C                                                                SECT2289
  803    C      SET LWR COVER =UPR COVER                                  SECT2290
  804     761  TMT(151)=TMT(150)                                          SECT2300
  805          TDC(87)=TDC(86)                                            SECT2310
  806          TDC(110)=TDC(109)                                          SECT2320
  807          TDC(112)=TDC(114)                                          SECT2330
  808          TDC(111)=TDC(84)                                           SECT2340
  809          TDC(174)=TDC(82)                                           SECT2350
  810          TDC(173) = TDC(95)                                         SECT2360
  811          TSEC(244) = D(1)                                           SECT2370
  812          YBLD(1SEC) = YBUD(1SEC)                                    SECT2390
  813          GO TO 762                                                  SECT2390
  814    C                                                                SECT2400
  815    C                                                                SECT2410
  816    C          *** TEST FOR STR, PL, HP, FDH (0,1,2,3) ***           SECT2420
  817    C               SETUP DATA FOR PL AND FDH                        SECT2430
  818    C            *** NX(LWR) = K(EFF)*NX(UPR) ***                    SECT2440
  819     7610 TDC(167) = DC(3)                                           SECT2450
  820          I = ND(12) - 1SEC                                          SECT2460
  821          TDC(72) = TDC(72)*TSEC(244)/DNXU(I)*DNXL(I)                SECT2470
  822          TDC(168) = TDC(96)                                         SECT2480
  823          IF (D(1) - CNSID) 763,764,7121                             SECT2490
  824    C                                                                SECT2500
  825    C          *** TEST FOR HC, FDH ***                              SECT2510
  826     763  IF (CNSID - D(2)) 7630,7630,764                           SECT2520
  827     7630 TDC(167) = DTCL                                            SECT2530
  828          TDC(168) = TDC(96) - TSEC(226) + TSEC(230)                 SECT2540
  829    C                                                                SECT2549
  830    C               **** PLATES , HC, FDH DATA ****                  SECT2550
  831     764  TDC(87) = TDC(72)/TDC(60)                                  SECT2560
  832          TDC(173) = TDC(168)*TDC(82)                                SECT2570
  833          TDC(112) = TDC(87) - TDC(168)                              SECT2580
  834          TMT(151) = TDC(112)*DLSKL                                  SECT2590
  835          IF (TDC(112) - SKMNL) 7640,7640,7641                       SECT2600
  836     7640 TDC(112) = SKMNL                                           SECT2610
  837          TMT(151) = SKMNL                                           SECT2620
  838          TDC(87)= TDC(112) + TDC(168)                               SECT2630
  839     7641 TDC(166) = TDC(71)/TDC(87)                                 SECT2640
  840    C                                                                SECT2650
  841    C     *** SETUP FOR LWR COVER COMPRESSION. ID=0 FIRST PASS. **   SECT2660
  842          ILWRC = ND(1)                                              SECT2670
  843    C                                                                SECT2679
  844    C               TEST FOR FC(MAX) LWR.                            SECT2680
  845          IF (TDC(162) - TDC(166)) 7642,7644,7644                    SECT2690
  846     7642 TDC(166) = TDC(162)                                        SECT2700
  847     7643 TDC(87) = TDC(71)/TDC(166)                                 SECT2710
  848          TDC(112) = TDC(87) - TDC(168)                              SECT2720
  849          TMT(151) = TDC(112)*DLSKL                                  SECT2730
  850    C                                                                SECT2739
  851    C            EVALUATE FC(LWR) FOR B/T.                           SECT2740
```

CARD NO	**** CONTENTS ****	
852	7644 CALL SF (TDC(166))	SECT2750
853	TDC(172) = TDC(87)	SECT2760
854	TDC(110) = TDC(107)/TDC(112) + D(1)	SECT2770
855	IF (TDC(167)) 7658,7658,7657	SECT2780
856	7657 TDC(110) = SQRT (D(3)*TDC(110)*(TDC(110) + D(1)) + D(2))	SECT2790
857	7658 TDC(174) = TDC(45)*TDC(110)	SECT2800
858	TDC(110) = TDC(82)/TDC(112)	SECT2810
859	C	SECT2820
860	C	SECT2830
861	C ***TEST FOR HF, FDH ***	SECT2840
862	IF (D(2) - CNSID) 765,765,7645	SECT2850
863	C	SECT2860
864	C **FDH **	SECT2870
865	765 TDC(110) = D(1)	SECT2880
866	TDC(111) = TDC(72)/TDC(87)	SECT2890
867	TDC(174) = D(1)	SECT2900
868	TDC(169) = DC(3)	SECT2910
869	TDC(170) = DC(3)	SECT2920
870	TDC(171) = TSEC(228)/D(2)	SECT2930
871	YBLD(1SEC) = YBLD(1SEC)*TDC(87)/TDC(88)	SECT2940
872	GO TO 7651	SECT2950
873	C	SECT2960
874	7650 TDC(169) = TSEC(231)	SECT2960
875	TDC(170) = TDC(91)	SECT2970
876	TDC(171) = TSEC(2[illegible])	SECT2980
877	7651 TDC(120) = TDC(112)/TDC(114)	SECT2990
878	TDC(113) = TDC(87) + TDC(170) + TDC(171) + TDC(174)	SECT3000
879	GO TO 750	SECT 3010
880	C	SECT3020
881	C	SECT3030
882	C *** PL, HF TEST FOR PASS NO = 1 OR 2	SECT3040
883	7645 IF (ILWRC - ND(2)) 7646,7650,7648	SECT3050
884	C	SECT3059
885	C *** PASS 1 TEST B/T(ALLOWABLE) TO B/T(ACTUAL) ***	SECT3060
886	7646 IF (TDC(174) - TDC(110)) 7647,7649,7649	SECT3070
887	C	SECT3080
888	C SEARCH FOR FC AT B/T(ALLOWABLE) + B/T(ACTUAL)	SECT3090
889	C SET ID=2 SAVE UPPER COVER DATA TDC(72,194), TSC(2), DTC(DH16)[illegible]	SECT3100
890	7647 ILWRC = ND(2)	SECT3110
891	TDC(169) = DTC	SECT3120
892	TDC(170) = TSC(2)	SECT3130
893	TDC(171) = TDC(194)	SECT3140
894	TDC(120) = TDC(72)	SECT3150
895	C SET LOWER COVER DATA FOR BOT SURF SET IK1= 2*ND(3)+1	SECT3160
896	DTC=DTCL	SECT3170
897	TDC(194) = TDC(168)+TDC(82)	SECT3180
898	TSC(2) = TDC(82)	SECT3190
899	TDC(72) = TDC(71)	SECT3200
900	IK1 = [illegible](2)	SECT3210
901	CALL [illegible]	SECT3220
902	TDC(113) = TSC(381)	SECT3230
903	C	SECT3239
904	C TEST WITH FC(I-1)	SECT3240
905	IF (TDC(113) - TDC(169)) 7650,7648,7648	SECT3250
906	7649 TDC(166) = TDC(113)	SECT[illegible]260
907	GO TO 7643	SECT3270
908	C	SECT3280
909	C ** SECOND PASS COMPLETE RESET DATA **	SECT[illegible]290
910	7648 DTC = TDC(169)	SECT3300
911	TSC(2) = TDC(170)	SECT3310
912	TDC(194) = TDC(171)	SECT3320
913	TDC(72) = TDC(120)	SECT3330
914	C	SECT3340
915	C **** CALC FT(LWR) TEST FOR PL, HP. ****	SECT3350
916	7649 TDC(111) = TDC(72)/TDC(87)	SECT3360
917	IF (CNSID - D(1)) 7660,7660,7661	SECT3370
918	7660 YBLD(1SEC) = YBUD(1SEC)*TDC(87)/TDC(88)	SECT3380
919	GO TO 762	SECT3390
920	C	SECT3399
921	7661 YBLD(1SEC) = YBUD(1SEC)*(DTCL + TDC(87))/(DTC + TDC(88))	SECT3400
922	GO TO 7650	SECT3410

CARD NO **** CONTENTS ****

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C
C     RESET KOPT DATA TO FINAL FORMAT
C     SETUP LOWER COVER --ASSUME SIMILAR TO UPPER COVER IN CONSTRUCTION
C     COMPUTE GEOMETRIC CONSTANTS
C      TEST FOR ALPHA+1/KSKLWR +,- ALPHA UPR --- USE SMALLER VALUE
 7121 TDC(180) = TDC(88)/TDC(114)
      TDC(180)=D(1)/TIONL
      IF (TDC(180)-TDC(160)) 7122,7123,7123
 7122 TDC(160)=TDC(180)
 7123 TDC(180)= TDC(97)/TDC(114)
      TDC(167)=(TDC(180)-D(1))/TDC(180)
      TDC(171)=TDC(167)*TDC(180)
      TDC(170) = TDC(171)*TDC(167)/D(2)
      TDC(171)=TDC(171)*TDC(167)/D(3)*TDC(167)
C
C      TBAR LWR COMP.
      TDC(172)= SQRT (TDC(71)*TDC(100)/(TDC(165)*TDC(163)))
      TDC(180)=TDC(71)/TDC(172)
      IF (TDC(162) - TDC(180)) 740,741,741
  740 TDC(172)= TDC(71)/TDC(162)
      TDC(180)=TDC(162)
  741 TDC(87)=TDC(72)/TDC(60)
      IF (TDC(87)-TDC(172)) 742,743,743
  742 TDC(87)=TDC(172)
  743 TDC(112)=TDC(87)/TDC(180)
C
C      SETUP DELTA SKL+TSKL
      TMT(151)=TDC(112)/KSKL
      IF (TDC(112) -SIONL) 744,744,745
  744 TDC(112)= SIONL
      TMT(151)= SIONL
      TDC(87) = TDC(112)*TDC(180)
C
C      COMPUTE BSTR LWR
  745 TDC(174)= SQRT ((TDC(71)*TDC(100)*TDC(100) / (PI*PI*TDC(183)) *TDC(
     187))) * (TDC(180)/(TDC(171)-(TDC(170)*TDC(170)/TDC(180)))))
C
C     TEMP CARD FOR BSTR LWR
      TDC(174) = TDC(82)
      TDC(173)=TDC(174)*(TDC(87)-TDC(112))
      IF (TDC(173)-TDC(194))746,747,747
  746 TDC(173)=TDC(194)
      TDC(87)=TDC(112) + (TDC(173)/TDC(174))
C
C      SETUP SUM TBAR LWR, FTL, BOT LWR
  747 TDC(111)=TDC(72)/TDC(87)
      TDC(110)=TDC(174)/TDC(112)
C
C        ***TEMP YBAR(LWR) (STR) ****
 7470 TDC(174) = (TDC(87) - TDC(112))/TDC(96)
      IF (D(1) - TDC(174)) 7471,7471,7472
 7471 TDC(174) = D(1)
 7472 YBLD(ISEC) = (TDC(88)*YBUD(ISEC) - TDC(114)/D(2)*TDC(114))/TDC(96)
     1 - TDC(114)
      TDC(174) = ((YBLD(ISEC)*TDC(174)+HSTMN/TDC(98) + TDC(112))*(TDC(87
     1) - TDC(112)) + TDC(112)/D(2)*TDC(112))/TDC(87)
      YBLD(ISEC) = TDC(174)
C
  782 TDC(120)= TDC(112)/TDC(114)
      TDC(180)= TDC(120)*TDC(90)
      TDC(171)= TDC(120)*TDC(93)
      TDC(170)= TDC(91)*TDC(87)/TDC(88)
      TDC(113)= TDC(87)+TDC(90)+TDC(91) + TDC(93)
C
C         RESET F(L) FOR PRINT
      TDC(180) = TDC(160)
C
C               ****RESET NX(UPR)****
  780 I = ND(12) - ISEC
      TDC(72) = TDC(72)/TSEC(244)*DXXU(I)/DXXL(I)
C
```

CARD NO	**** CONTENTS ****	
994	C	SECTN4080
995	C	SECTN4090
996	C FRONT AND REAR SPARS	SECTN4100
997	C FRONT SPAR - ST. ID=1	SECTN4110
998	7500 IHLB = ND(1)	SECTN4120
999	C	SECTN4130
1000	CALL STHEB (TDC(75),TDC(63))	SECTN4140
1001	C	SECTN4150
1002	C	SECTN4160
1003	DO 753 I=1,6	SECTN4170
1004	TDC(I+178) = TSS(I+3)	SECTN4180
1005	753 CONTINUE	SECTN4190
1006	C	SECTN4200
1007	C	SECTN4210
1008	C	SECTN4220
1009	C	SECTN4230
1010	C SAVE THRS X DELTA RSW	SECTN4240
1011	TMT(152)=TSS(29)	SECTN4250
1012	IF (TSS(29) - TDC(180)) 7530,7531,7531	SECTN4260
1013	7530 TMT(152)=TDC(1 *DLRSW	SECTN4270
1014	C	SECTN4280
1015	C REAR SPAR ST	SECTN4290
1016	7531 IHLB ND(2)	SECTN4300
1017	C	SECTN4310
1018	CALL STHEB (TDC(76),TDC(70))	SECTN4320
1019	DO 754 I=1,6	SECTN4330
1020	TDC(I+185) = TSS(I+3)	SECTN4340
1021	754 CONTINUE	SECTN4350
1022	C	SECTN4360
1023	C	SECTN4370
1024	C	SECTN4380
1025	C	SECTN4390
1026	C SAVE THRS X DELTA RSW	SECTN4400
1027	TMT(153)=TSS(29)	SECTN4410
1028	IF (TSS(29) TDC(187)) 7540,730,730	SECTN4420
1029	7540 TMT(153)=TDC(187)*DLRSW	SECTN4430
1030	C	SECTN4440
1031	C	SECTN4450
1032	C SET DELTA TW LOC TO ZERO - COVERS AND FS/RS	SECTN4460
1033	730 DO 731 I=1,4	SECTN4470
1034	TDC(I+115) =DC(3)	SECTN4480
103	TDC(I+174)=DC(3)	SECTN4490
1036	TSC(I+35)=DC(3)	SECTN4500
1037	731 CONTINUE	SECTN4510
1038	TDC(120) = DC(3)	SECTN4520
1039	TDC(185) = DC(3)	SECTN4530
1040	TDC(192) = DC(3)	SECTN4540
1041	C	SECTN4550
1042	C EXIT STRENGTH WEIGHT ANALYSIS	SECTN4560
1043	GO TO 799	SECTN4570
1044	C	SECTN4580
1045	C	SECTN4590
1046	C VF CALC, TEST DELTA	SECTN4600
1047	C 3=CONST (I=1)	SECTN4610
1048	C TSC(80) NOS(MAX), TSC(79)=NOS(MIN),	SECTN4620
1049	C COMPUTE TOTAL PENALTIES -- TEST EACH COMPONENT	SECTN4630
1050	C	SECTN4640
1051	C UPPER COVER	SECTN4650
1052	400 IF (TDC(116)) 721,721,715	SECTN4660
1053	C	SECTN4669
1054	C TWF(FEOD)= TSK* DELTA TW	SECTN4670
1055	715 TWF= ND(2)	SECTN4680
1056	TSS(99)=TMT(150)+TDC(116)	SECTN4690
1057	TSC(79)=TDC(81)	SECTN4700
1058	C	SECTN4710
1059	C TEST FOR STR ORIENTATION	SECTN4720
1060	IF (IDWF - ND(2)) 7150,717,717	SECTN4730
1061	C	SECTN4740
1062	C OPT SEARCH FOR V.F	SECTN4750
1063	7150 TSC(80)=TDC(150)	SECTN4760
1064	GO TO 7170	SECTN4770

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CARD NO  ****                          CONTENTS                          ****
1065     C                                                                SECT4780
1066     C       CONST. 0 OR NOS. -- USE OPT STRUCT. NOS + MIN AND MAX    SECT4790
1067      717  TSC(80)= TDC(81)                                           SECT4800
1068     C                                                                SECT4810
1069     C      SETUP FOR SEARCH  IB=1 FOR FIRST PASS                     SECT4820
1070      7170 TSC(1)=TSC(79)                                            SECT4830
1071           IB=ND(1)                                                  SECT4840
1072           CALL SFSCH (TSC(1))                                       SECT4850
1073     C                                                                SECT4860
1074     C      SAVE 35 CELLS-- TSC(1)---TSC(35) TO TSC(41)---TSC(75)     SECT4870
1075      719  DO 7190 I=1,35                                            SECT4880
1076           TSC(I+40)=TSC(I)                                          SECT4890
1077      7190 CONTINUE                                                  SECT4900
1078     C                                                                SECT4909
1079     C       TEST FOR NOS SEARCH                                      SECT4910
1080           IF (TSC(80) - TSC(1)) 7180,720,720                        SECT4920
1081     C     SETUP IB=1                                                 SECT4930
1082      7180 TSC(1)=TSC(40) -D(1)                                      SECT4940
1083           IF (TSC(1)) 720,720,718                                   SECT4950
1084      718  CALL SFSCH (TSC(1))                                       SECT4960
1085     C                                                                SECT4969
1086     C     TEST TBARS                                                 SECT4970
1087           IF (TSC(6) - TSC(46)) 7181,720,720                        SECT4980
1088      7181 IB=ND(2)                                                  SECT4990
1089           GO TO 719                                                 SECT5000
1090     C                                                                SECT5010
1091     C      OPT WF SECT. FOUND -- COMPUTE DELTA WF --SIR,RIBS,MISC. SK.,ATT. SECT5020
1092      720  TDC(120)= TSC(49)-TDC(89)                                 SECT5030
1093           TDC(118) = TSC(56) - TDC(96)                              SECT5040
1094           TSC(36)= TSC(50)+TSC(53) TDC(90)-TDC(93)                  SECT5050
1095           TSC(39)= TSC(52)-TDC(92)                                  SECT5060
1096           TSC(37)= TSC(51)-TDC(91)                                  SECT5070
1097           GO TO 722                                                 SECT5080
1098     C                                                                SECT5090
1099     C       SAVE STRUCT DATA IN WF BLOCK                             SECT5100
1100      721  DO 7220 I=1,35                                            SECT5110
1101           TSC(I+40) = TSC(I)                                        SECT5120
1102      7220 CONTINUE                                                  SECT5130
1103     C                                                                SECT5140
1104     C                                                                SECT5150
1105     C      TEST DELTA TWF (HR -- TWF(EQU)= (D(UPR)/D(LWR))XTWF(EQD)  SECT5160
1106      722  TSC(38) = DC(3)                                           SECT5170
1107           IF (TDC(117)) 727,727,724                                 SECT5180
1108     C                                                                SECT5190
1109     C       COMPUTE LOWER COVER PENALTIES                            SECT5200
1110     C       TEST FOR VERT.                                           SECT5210
1111      724  IF (VTID) 725,725,7240                                    SECT5220
1112      7240 TDC(117)=TDC(116)                                         SECT5230
1113      725  TWT(164)= TDC(87)/TDC(88)                                 SECT5240
1114           TDC(119)=TDC(118)*TWT(164)                                SECT5250
1115           TSC(38)=TSC(36)*TWT(164)                                  SECT5260
1116           TSC(37) = TSC(37)*TWT(164) + TSC(37)                      SECT5270
1117     C                                                                SECT5280
1118     C                                                                SECT5290
1119     C                                                                SECT5300
1120     C                                                                SECT5310
1121     C                                                                SECT5320
1122     C              *FS/RS PENALTIES*                                 SECT5330
1123      727  TDC(177) = TDC(69)*TDC(175)                               SECT5340
1124           TDC(178) = TDC(70)*TDC(176)                               SECT5350
1125           TDC(185) = TDC(177)                                       SECT5360
1126           TDC(192) = TDC(178)                                       SECT5370
1127     C                                                                SECT5380
1128     C                                                                SECT5410
1129     C                                                                SECT5420
1130     C       EXIT                                                     SECT5430
1131      799  RETURN                                                    SECT5440
1132           END                                                       SECT5450
1133     C*****************************************************************
1134     C
1135     C       *****SUBROUTINE SFSCH*****
```

CARD NO **** CONTENTS ****

```
1136      C   ***SEARCH LEVEL 2 CONTROL - ALLOWABLE DESIGN STRESSES***
1137      C
1138      C*****************************************************************
1139      C
1140            SUBROUTINE SFSCH (BSTR)                                    SFSC0010
1141      C                                                                SFSC0011
1142      C     FC SEARCH SUBROUTINE, GIVEN BI, WFID AND BID               SFSC0020
1143      C                                                                SFSC0030
1144      C                                                                SFSC0070
1145      C     IWF1 TSK SEARCH ID  1=OPT TSK, 2= TWF, 3=TSK(INPUT)        SFSC0080
1146      C      IBI=1 START AT FCMAX,  =2 USE FCI-1                       SFSC0090
1147      C      BSTR = NO OF STR                                          SFSC0100
1148      C                                                                SFSC0140
1149            COMMON T(2060),D(2060),CD(2000),ND(100)                    SFSC0150
1150      C                                                                SFSC0160
1151            DIMENSION                                  DC(100),        SFSC0170
1152           1TDC(200),TSC(420),TSS(100),TWT(400),TSEC(300)              SFSC0180
1153           2,DRIS(4),DNXU(11),DNXL(11)                                 SFSC0181
1154      C                                                                SFSC0190
1155            EQUIVALENCE (TDC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961)),  SFSC0200
1156           1(DC(1),D(1401)),(TWT(1),CD(1101)),(TSEC(1),CD(1501)),      SFSC0201
1157           2(DNXU(1),D(931)),(DNXL(1),D(942)),(DRIS(1),D(975)),        SFSC0202
1158           3(STRFN,D(361)),(SKMN,D(370)),(CNSID,D(461)),               SFSC0203
1159           4(STRSX,D(455)),(STRRO,D(456)),                             SFSC0204
1160           5(TKXMN,TDC(64)),(TKMX,TDC(65)),                            SFSC0205
1161           6(IB,ND(52)),(IWF,ND(51)),(KFC,ND(49)),(IHX,ND(47)),        SFSC0206
1162           7(I02,ND(46)),(I01,ND(45)),(LF3,ND(44)),(LF2,ND(43)),(LF1,ND(42)),  SFSC0207
1163           8(IL,ND(40)),(IK,ND(39)),(IKT,ND(32)),(IN,ND(30)),(ISC,ND(86)),  SFSC0208
1164           9(ISEC,ND(55)),(N,ND(31)),(I,ND(29))                        SFSC0209
1165      C                                                                SFSC0210
1166      C                                                                SFSC0220
1167      C                                                                SFSC0270
1168      C                                                                SFSC0280
1169      C     SETUP B AND MOVE IDS                                       SFSC0290
1170      C                                                                SFSC0300
1171      C                                                                SFSC0310
1172       3001 TSC(1)=BSTR                                                SFSC0320
1173            TSC(3) =TDC(195)                                           SFSC0330
1174            TSS(12) = TDC(195)                                         SFSC0340
1175            TSC(2)= TDC(77)/(TSC(1) *D(1))                             SFSC0350
1176      C                                                                SFSC0360
1177      C        *** SETUP K(CAPS/SPARS), K(RIBS) FOR STR, PL, HP, FDH. ***  SFSC0370
1178      C              **ADD NET EFF WIDTH FOR TENSION**                 SFSC0371
1179            TSEC(232) = TSC(1)/(TSC(1)*D(1))                           SFSC0380
1180            TSEC(260) = DRIS(2)                                        SFSC0390
1181            TSEC(244) = TSC(1)                                         SFSC0400
1182            TSEC(233) = (TSC(1) + D(2))/TS/(1)                         SFSC0410
1183      C             **TEST CONST **                                    SFSC0420
1184            IF (CNSID - D(2)) 3002,3009,3006                           SFSC0430
1185      C             **TEST FOR STR OR H/SPAR**                         SFSC0440
1186       3002 IF (CNSID) 3003,3003,3008                                  SFSC0450
1187       3003 IF (STRFN - D(1)) 3006,3006,3007                           SFSC0460
1188       3006 TSEC(244) = DC(3)                                          SFSC0470
1189       3007 TSEC(232) = D(1)                                           SFSC0480
1190            TSEC(260) = DRIS(1)                                        SFSC0490
1191       3008 TSEC(233) = TSEC(232)                                      SFSC0500
1192      C            ***CALC REQD T-BAR INSERTS, EFF TENSION WIDTH DATA***  SFSC0509
1193       3009 TSEC(226) = TSEC(225)/TSC(2)*TSEC(232)                     SFSC0510
1194            TSEC(230) = TSEC(229)/TSC(2)*TSEC(232)                     SFSC0520
1195            TSEC(261) = TDC(77)*TSEC(239)                              SFSC0521
1196            TSEC(244) = TSEC(261)/(TSEC(261)-TSEC(244)*TSEC(260)-D(2)*DRIS(2  )SFSC0522
1197      C                                                                SFSC0530
1198      C     SETUP LOC OF F1,F2,F3 DATA                                 SFSC0540
1199            LF1=ND(13)                                                 SFSC0550
1200            LF2=ND(14)                                                 SFSC0560
1201            LF3=ND(15)                                                 SFSC0570
1202      C                                                                SFSC0571
1203      C            ***CALC. FC(L**) FOR T-BAR SET BY TENSION***        SFSC0572
1204      C              FC=(KXC*FT)/(KXT). KXT=KX(L)*KW(EFF)*KNXU/KNXL   SFSC0573
1205            I =ND(12) - ISEC                                           SFSC0574
1206            TSS(67) = TDC(72)/TDC(71)*DNXL(11)/DNXU(11)*TDC(49) TSEC(244)  SFSC0575
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CARD NO    ****                       CONTENTS                          ****

      3010 IF ( TSS(67) ) 300,300,3004                                   SFSC0570
      3004 IF ( TSS(67) - TSC(3) ) 3005,300,300                          SFSC0579
      3005 TSC(3) = TSS(67)                                              SFSC0577
           TSS(12) = TSS(67)                                             SFSC0578
     C                                                                   SFSC0580
     C        TEST FOR OPT, TWF, OR TSK INPUT                            SFSC0590
      300  IF (ND(2) - IWF) 302,301,302                                  SFSC0600
     C                                                                   SFSC0610
     C        TWF SEARCH - USE OPT(ST) FCCR                              SFSC0620
      301  TSS(12) = TDC(84)                                             SFSC0630
           TSS(67) = TSS(99)                                             SFSC0640
           GO TO 303                                                     SFSC0650
     C                                                                   SFSC0660
     C        ST TSK  OPT OR INPUT -- TEST 18                            SFSC0670
      302  TSS(67) = SKMN                                                SFSC0680
           IF (ND(1) - 18) 420,303,303                                   SFSC0690
      420  TSS(12) = TSC(84)                                             SFSC0700
     C                                                                   SFSC0710
     C        SETUP CONTROL POINTS                                       SFSC0720
      303  TSS(100) = TSC(2)/TSS(67)                                     SFSC0730
           TSS(67) = TDC(72)/(TDC(194)/TSC(2)*TSEC(232) + TSS(67))       SFSC0740
           IF (TSS(67)-TSC(3)) 422,423,423                               SFSC0750
      422  TSC(3) = TSS(67)                                              SFSC0760
     C                                                                   SFSC0761
     C           ***KSK RANGE TEST WITH ABS MAX KSK=F(KSTR,BSTR,LMIN(STR))*SFSC0762
     C             *KSK(A/MAX)= BSTR/(BSTR + KSTR*LMIN(STR))*            SFSC0762
     C             *KSK(A/MAX)= BSTR/(BSTR + KSTR*LMIN(STR))*            SFSC0763
     C             *CHECK WITH REQD MAX. SET REQD TO ABS MAX IF GREATER  SFSC0764
     C             *CHECK REQD MIN. SET TO .70 ABS MAX IF (A) RANGE REQD. SFSC0765
     C              (B) IF MIN GREATER THAN ABS MAX*                     SFSC0766
     C           ***CHECK ONLY IF STR CONST***                           SFSC0767
      423  TSEC(282) = TKKMN                                             SFSC0770
           TSEC(283) = TKKMX                                             SFSC0771
           IF (CNSID) 4230,4230,4239                                     SFSC0772
      4230 TSC(412) = STRSK                                              SFSC0775
           IF (STRSK) 4231,4231,4232                                     SFSC0776
      4231 TSC(412) = STRRO                                              SFSC0780
      4232 TSC(412) = TSC(2)/(TSC(412)*THT(305) + TSC(2))                SFSC0781
           IF (TSC(412) - TKKMX) 4233,4239,4239                          SFSC0782
      4233 TKKMX = TSC(412)                                              SFSC0785
           IF (TKKMN - TKKMX) 4234,4235,4235                             SFSC0786
      4234 IF (TSC(412) - 1.1*TKKMN) 4235,4236,4236                      SFSC0790
      4235 TKKMN = 0.70*TSC(412)                                         SFSC0791
           GO TO 4239                                                    SFSC0795
      4236 TKKMN = TSC(412)                                              SFSC0800
      4239 TSC(412) = TKKMX                                              SFSC0805
     C                                                                   SFSC0809
     C                 EEE TEST FOR FOH ***                              SFSC0810
           IF (CNSID - D(2)) 4240,4240,480                               SFSC0820
      4240 IKI= ND(2)                                                    SFSC0830
     C                                                                   SFSC0840
     C          **** SETUP CAP AREA FOR NX CALC. ( PL OR HP) ****        SFSC0850
           TDC(194) = TDC(194)*TSEC(232)                                 SFSC0860
           CALL BOT                                                      SFSC0870
     C                        RESET CAP AREA TO K=1.0                    SFSC0880
           TDC(194) = TDC(194)/TSEC(232)                                 SFSC0890
           TDC(196) = TSC(381)                                           SFSC0900
           IF (TDC(196) - TSC(3)) 424,425,425                            SFSC0910
      424  TSC(3) = TDC(196)                                             SFSC0920
     C                                                                   SFSC0930
     C          **** TEST CONST.  MIN GAGE TEST FOR B/T  IN STR. CASE ONLY ** SFSC0940
      425  IF (CNSID) 490,4250,490                                       SFSC0950
     C                                                                   SFSC0960
     C              SET B/T (MIN).  ID=1                                 SFSC0970
      4250 TSC(409) = TSS(100)                                           SFSC0980
           IKI = ND(1)                                                   SFSC0990
     C          **** SETUP CAP AREA FOR NX CALC. ( PL OR HP) ****        SFSC1000
           TDC(194) = TDC(194)*TSEC(232)                                 SFSC1010
           CALL BOT                                                      SFSC1020
     C                        RESET CAP AREA TO K=1.0                    SFSC1030
           TDC(194) = TDC(194)/TSEC(232)                                 SFSC1040
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CARD NO  ****                          CONTENTS                          ****
1278           TSS(100) = TSC(381)                                        SFSC1050
1279      425  IF (TSC(3) - TSS(102)) 426,427,427                         SFSC1060
1280      426  TSC(3) = TSS(100)                                          SFSC1070
1281      C                                                               SFSC1080
1282      C       FCMAX = TSC(3),  FC START = TSS(67)                     SFSC1090
1283      427  TSS(67) = TSS(12)                                          SFSC1100
1284      C                                                               SFSC1110
1285      4270 IF (TSC(3) - TSS(67) - TOC(50)) 431,306,306                SFSC1120
1286      C      SETUP FC3 =FCSO                                          SFSC1130
1287      431  TSS(67) = TSC(3)                                           SFSC1140
1288           TSS(12) = TSS(67)                                          SFSC1150
1289      C                                                               
1290      C     SET ID FOR TSCH TRACE              ISG = 1               
1291      C                                                               
1292      306  ISG=ND(1)                                                  SFSC1160
1293           CALL TSCH(TSS(12))                                         SFSC1161
1294           IF (ND(2) - TOL) 304,305,307                               SFSC1170
1295      C      L1=LMAX, TEST FCMAX                                      SFSC1180
1296      304  DO 432 I=1,35                                              SFSC1190
1297           IN=I+LF3                                                   SFSC1200
1298      432  TSC(I)=TSC(I+380)                                          SFSC1210
1299           TSS(9) = TSC(383)                                          SFSC1220
1300      433  IF (TSS(12)-TSC(3)) 350,309,309                           SFSC1240
1301      C     USE F3 DATA, MOVE TO 1 LOC                               SFSC1250
1302      309  N=LF3                                                      SFSC1260
1303      330  DO 310 I=1,35                                              SFSC1270
1304           IN=I+N                                                     SFSC1280
1305      310  TSC(I+380)=TSC(IN)                                         SFSC1290
1306           GO TO 399                                                  SFSC1310
1307      C      F3 TOO LARGE, SET=FCMAX!                                 SFSC1320
1308      305  TSC(3)= TSS(12)                                            SFSC1330
1309           TSS(12)=D(30)*TSC(12)                                      SFSC1340
1310           GO TO 306                                                  SFSC1350
1311      C      F3 OK SAVE DATA AND LOC OF DATA  35 CELLS PER BLOCK      SFSC1360
1312      C                                                               SFSC1370
1313      C                                                               SFSC1380
1314      C            *** FOR CASE:  FCMAX, B=1.0  ***                   SFSC1390
1315      400  TSS(12) = TSC(3)                                           SFSC1400
1316           TSC(2) = D(1)                                              SFSC1410
1317           GO TO 492                                                  SFSC1420
1318      C                                                               SFSC1430
1319      C                                                               SFSC1440
1320      C                                                               SFSC1450
1321      C          ***PLATES AND H/C ***                                SFSC1460
1322      490  TSS(67) = TSS(12)                                          SFSC1470
1323      4900 IF (TSC(3) - TSS(67)) 491,493,492                          SFSC1480
1324      491  TSS(67) = TSC(3)                                           SFSC1490
1325           TSS(12) = TSC(3)                                           SFSC1500
1326           GO TO 493                                                  SFSC1510
1327      492  TSC(3) = TSS(67)                                           SFSC1520
1328      C                                                               
1329      C     SET ID FOR TSCH TRACE              ISG = 2               
1330      C                                                               
1331      493  ISG=ND(2)                                                  SFSC1530
1332           CALL TSCH(TSS(12))                                         SFSC1531
1333           GO TO 399                                                  SFSC1540
1334      C                                                               SFSC1550
1335      C                                                               SFSC1560
1336      307  DO 308 I=1,35                                              SFSC1570
1337      308  TSC(I+190)=TSC(I+380)                                      SFSC1580
1338           TSS(9)= TSC(383)                                           SFSC1600
1339      C     TEST SLOPE AT F3                                         SFSC1610
1340           TSS(11)=D(37)*TSS(12)                                      SFSC1620
1341      C                                                               
1342      C     SET ID FOR TSCH TRACE              ISG = 3               
1343      C                                                               
1344           ISG=ND(3)                                                  SFSC1629
1345           CALL TSCH (TSS(11))                                        SFSC1630
1346           IF (ND(1 - ND(2)) 311,433,433                              SFSC1640
1347      311  TSS(8)= TSC(383)                                           SFSC1650
1348           IF (TSS(9)-TSS(8)) 433,302,312                             SFSC1660
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CARD NO	**** CONTENTS ****	
1349	C SEARCH FC LESS THAN F3, SETUP F2AND F1	SFSC1670
1350	312 TSS(11)=D(38)*TSS(12)	SFSC1680
1351	NFC=ND(1)	SFSC1690
1352	C	
1353	C SET ID FOR TSCH TRACE ISG = 4	
1354	C	
1355	320 ISG=ND(4)	SFSC1700
1356	CALL TSCH(TSS(11))	SFSC1701
1357	IF (101 - ND(2)) 313,310,313	SFSC1710
1358	313 TSS(8)= TSC(383)	SFSC1720
1359	DO 314 I=1,35	SFSC1730
1360	IN=I+LF2	SFSC1740
1361	314 TSC(IN)=TSC(I+380)	SFSC1750
1362	IF (NFC - ND(2)) 3140,3141,3140	SFSC1770
1363	3140 IF (TSS(8)-TSS(9)) 3141,321,324	SFSC1780
1364	3141 NFC=ND(2)	SFSC1790
1365	IF (101 - ND(2))315,315,324	SFSC1800
1366	C DO F1 DATA	SFSC1810
1367	315 TSS(10) = TSS(11) - D(38)*(TSS(12) - TSS(11))	SFSC1820
1368	IF (TSS(10) - TDC(50)/D(38)) 329,329,323	SFSC1825
1369	C	
1370	C SET ID FOR TSCH TRACE ISG = 5	
1371	C	
1372	323 ISG=ND(5)	SFSC1830
1373	CALL TSCH(TSS(10))	SFSC1831
1374	IF (101 - ND(2)) 316,321,316	SFSC1840
1375	316 TSS(7)= TSC(383)	SFSC1850
1376	DO 3161 I=1,35	SFSC1860
1377	IN=I+LF1	SFSC1870
1378	3161 TSC(IN)=TSC(I+3	SFSC1880
1379	C INTERPOLATION NO 1	SFSC1900
1380	326 IK=ND(1)	SFSC1910
1381	CALL BGSP (TSS(40),TSS(7))	SFSC1920
1382	3262 IF (IL - ND(2)) 327,340,331	SFSC1930
1383	C LEFT, MOVE 1 AND 2 TO 2 AND 3	SFSC1940
1384	327 IF (TSS(11) - TSS(10) - TDC(50)/D(38)) 328,317,317	SFSC1950
1385	328 IF (TSS(8)-TSS(7))329,329,344	SFSC1960
1386	C USE F2 DATA	SFSC1970
1387	329 M=LF2	SFSC1980
1388	GO TO 330	SFSC1990
1389	317 TSS(9)= TSS(8)	SFSC2000
1390	TSS(8)= TSS(7)	SFSC2010
1391	TSS(12)=TSS(11)	SFSC2020
1392	TSS(11)= TSS(10)	SFSC2030
1393	M=LF3	SFSC2040
1394	LF3=LF2	SFSC2050
1395	LF2=LF1	SFSC2060
1396	LF1=M	SFSC2070
1397	GO TO 315	SFSC2080
1398	C F2 NG, TEST EPS FC 0,+ USE F3 DATA	SFSC2090
1399	318 IF (TSS(12) - TSS(11) - TDC(50)*D(38)) 309,319,319	SFSC2100
1400	319 TSS(11)= (TSS(11) + TSS(12))/D(2)	SFSC2110
1401	GO TO 2	SFSC2120
1402	C F1 NG TEST EPS FC 0,+,USE F2,F3 -=LOOP	SFSC2130
1403	321 IF (TSS(11) - TSS(10) - D(38)*TDC(50)) 324,324,322	SFSC2140
1404	322 TSS(10)=(TSS(10)+TSS(11)/D(2)	SFSC2150
1405	GO TO 323	SFSC2160
1406	324 TSS(7)=TSS(8)	SFSC2170
1407	TSS(8)=TSS(9)	SFSC2180
1408	M=LF1	SFSC2190
1409	LF1=LF2	SFSC2200
1410	330 LF2=M	SFSC2210
1411	TSS(11)= (TSS(10)+TSS(12))/D(2)	SFSC2220
1412	IF (TSS(12) - TSS(10) - D(38)*TDC(50)/D(2)) 343,343,3540	SFSC2225
1413	C	
1414	C SET ID FOR TSCH TRACE ISG = 6	
1415	C	
1416	3540 ISG = ND(6)	SFSC2229
1417	CALL TSCH (TSS(11))	SFSC2230
1418	IF (101 - ND(2)) 325,343,325	SFSC2240
1419	325 TSS(8)=TSC(383)	SFSC2250

CARD NO	****	CONTENTS	****
1426		DO 337 I=1,35	SFSC2260
1427		IN=I+LF2	SFSC2270
1428	337	TSC(IN)=TSC(I+300)	SFSC2280
1429		GO TO 326	SFSC2300
1424	C	ID=3 EXTRAP. RIGHT TEST WITH FMAX	SFSC2310
1425	331	IF (TSS(12)/D(37) - TSC(3)) 332,309,309	SFSC2320
1426	C	MOVE 2,3 TO 1AND 2	SFSC2330
1427	332	DO 333 I=1,2	SFSC2340
1428		TSS(I+6)=TSS(I+7)	SFSC2350
1429	333	TSS(I+9)=TSS(I+10)	SFSC2360
1430		N=LF1	SFSC2380
1431		LF1=LF2	SFSC2390
1432		LF2=LF3	SFSC2400
1433		LF3=N	SFSC2410
1434		TSS(12) = (TSS(12) - TSC(3))/D(2)	SFSC2420
1435		IF (TSS(12) - TSS(11) - TDC(50)/D(41)) 329,329,334	SFSC2430
1436	C		SFSC2440
1437	C		SFSC2450
1438	C		
1439	C	SET ID FOR TSCH TRACE ISO = 7	
1440	C		
1441	334	ISO=ND(7)	SFSC2460
1442		CALL TSCH(TSS(12))	SFSC2461
1443		IF (101 - ND(2)) 335,338,335	SFSC2470
1444	335	TS9(9)=TSC(383)	SFSC2480
1445		DO 336 I=1,35	SFSC2490
1446		IN=I+LF3	SFSC2500
1447	336	TSC(IN)=TSC(I+300)	SFSC2510
1448		GO TO 326	SFSC2530
1449	C	SET FCMAX=F3	SFSC2540
1450	338	TSC(3)=TSS(12)	SFSC2580
1451		IF (TSS(11) + D(38)*TDC(50) - TSS(12)) 339,329,329	SFSC2560
1452	339	TSS(12)= (TSS(11)+TSS(12))/D(2)	SFSC2570
1453		GO TO 334	SFSC2580
1454	C		SFSC2590
1455	C	FMI FOUND COMPUTE TMI	SFSC2600
1456	340	TSS(85)=TDC(47)	SFSC2610
1457	C	TEST FMI WITH F1 AND F3 FOR INTERVAL	SFSC2620
1458		IF (TSS(10)-TSS(65)) 411,344,344	SFSC2630
1459	411	IF (TSS(85)-TSS(12)) 412,308,309	SFSC2640
1460	C		
1461	C	SET ID FOR TSCH TRACE ISO = 8	
1462	C		
1463	412	ISO=ND(8)	SFSC2650
1464		CALL TSCH(TSS(85))	SFSC2661
1465	C	IF LMI=LMAX,USE MI, GO TO EXIT	SFSC2680
1466		IF (101 - ND(2)) 380,341,390	SFSC2670
1467	C	FMI NG, USE MIN OF F1,F2,F3	SFSC2680
1468	341	IF (TSS(7)-TSS(8))343,343,342	SFSC2690
1469	342	IF (TSS(9)-TSS(8))309,329,326	SFSC2700
1470	343	IF (TSS(7)-TSS(9))344,344,309	SFSC2710
1471	C	USE F1 DATA	SFSC2720
1472	344	N=LF1	SFSC2730
1473		GO TO 330	SFSC2740
1474	C		SFSC2750
1475	C		SFSC2760
1476	C	FIND FMAX FOR START BETWEEN F3 AND FMAX SET F1=F3	SFSC2770
1477	350	N=LF1	SFSC2780
1478		LF1=LF3	SFSC2790
1479		LF3=N	SFSC2800
1480		TSS(7)=TSS(9)	SFSC2810
1481		TSS(10)=TSS(12)	SFSC2820
1482		TSS(88) = D(39)*(TSC(3) - TSS(10))	SFSC2830
1483		IMX=ND(1)	SFSC2840
1484		TSS(11)=TSS(10)+TSS(88)	SFSC2850
1485	C		
1486	C	SET ID FOR TSCH TRACE ISO = 9	
1487	C		
1488		ISO=ND(9)	SFSC2858
1489		CALL TSCH (TSS(11))	SFSC2860
1490		IF (101 - ND(2)) 351,381,351	SFSC2870

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CARD NO   ***                    CONTENTS                       ****

  351 TSS(8)=TSC(383)                                        SFSC2880
      DO 352 I=1,35                                          SFSC2890
      IN=I+LF2                                               SFSC2900
  352 TSC(IN)=TSC(I+380)                                     SFSC2910
      IF (TSS(8)-TSS(7))355,355,353                          SFSC2930
C      MOVE F2 TO F3,OC F2 AND INTERP                        SFSC2940
  353 N=LF3                                                  SFSC2950
      LF3=LF2                                                SFSC2960
      TSS(12) = TSS(11)                                      SFSC2970
      TSS(9)=TSS(8)                                          SFSC2980
      GO TO 354                                              SFSC2990
  355 IMX=IMX+ND(1)                                          SFSC3000
      TSS(12)=TSS(11)+TSS(68)                                SFSC3010
C
C     SET ID FOR TSCH TRACE               ISG = 10
C
      ISG=ND(10)                                             SFSC3?19
      CALL TSCH (TSS(12))                                    SFSC3020
      IF (101 - ND(2)) 356,360,356                           SFSC3030
C      TEST IMX FOR 10 AND TBAR 2,3+.001                     SFSC3040
  356 TSS(9)=TSC(383)                                        SFSC3050
      DO 357 I=1,35                                          SFSC3060
      IN=I+LF3                                               SFSC3070
  357 TSC(IN)=TSC(I+380)                                     SFSC3080
      IF (IMX -ND(10)) 358,326,326                           SFSC3100
  358 IF (TSS(8)-TSS(9)-D(64))326,326,359                    SFSC3110
C     MOVE 2,3 TO 1,2                                        SFSC3120
  359 N=LF1                                                  SFSC3130
      LF1=LF2                                                SFSC3140
      LF2=LF3                                                SFSC3150
      LF3=N                                                  SFSC3160
      TSS(7)=TSS(8)                                          SFSC3170
      TSS(8)=TSS(9)                                          SFSC3180
      TSS(10)=TSS(11)                                        SFSC3190
      TSS(11)=TSS(12)                                        SFSC3200
      GO TO 355                                              SFSC3210
C      F3  NO                                                SFSC3220
  360 IF (TSS(7) - TSS(8)) 353,353,338                       SFSC3230
C                                                            SFSC3240
 3890 TSS(11) = TSS(62)                                      SFSC3250
      GO TO 389                                              SFSC32?0
C                                                            SFSC3270
C     F2 NO I NG  SET FCMAX = F2  MOVE FC2 ONLY TO F3 ,TEST 102   SFSC3280
  381 TSS(61)= TSS(10)                                       SFSC3290
  389 TSC(3 )=TSS(11)                                        SFSC3300
      TSS(63)= TSS(11)                                       SFSC3310
      IF (ND(2) - 102) 362,373,368                           SFSC3320
C      LI LESS THAN LMIN, ASTR OK  R=LI/LMIN                 SFSC3330
  362 TSS(58) = TSC(LF1 + 25)                                SFSC3340
  367 TSS(80)=TSC(405)                                       SFSC3350
      TSS(62) =(TSS(61) + TSS(63))/D(2)                      SFSC3360
C
C     SET ID FOR TSCH TRACE               ISG = 11
C
      ISG=ND(11)                                             SFSC3369
      CALL TSCH (TSS(62))                                    SFSC3370
C     TEST 101,102 FOR TYPE OF DATA AND CONDITION            SFSC3380
      IF (101 - ND(2)) 363,365,363                           SFSC3390
C                                                            SFSC3400
C      F2 OK, SAVE IN BASIC F2 LOC                           SFSC3410
  363 TSS(11)=TSS(62)                                        SFSC3420
      TSS(8) = TSC(383)                                      SFSC3430
      DO 384 I=1,35                                          SFSC3440
      IN=I+LF2                                               SFSC3450
  384 TSC(IN)=TSC(I+380)                                     SFSC3460
      TSS(58)=TSC(405)                                       SFSC3480
C     INTERPOLATE AT R=1.0                                   SFSC3490
      IK=ND(2)                                               SFSC3500
      CALL C03P (TSS(61),TSS(58))                            SFSC3510
      TSS(12)=TPC(47)                                        SFSC3520
C
```

```
CARD NO  ****                          CONTENTS                          ****
 1562     C     SET ID FOR TSCH TRACE              ISG = 12
 1563     C
 1564           ISG=ND(12)                                                SFSC3529
 1565           CALL TSCH (TSS(12))                                       SFSC3530
 1566           TSC(3)= TDC(47)                                           SFSC3540
 1567           IF (101 - ND(2)) 3650,338,3650                            SFSC3550
 1568     C     TEST FC1-F2                                               SFSC3560
 1569      3650 IF (TSS(12) - TSS(11)) 3651,353,335                       SFSC3570
 1570      3651 TSS(9) = TSS(8)                                           SFSC3580
 1571           TSC(3) = TSS(11)                                          SFSC3590
 1572           TSS(11) = TSS(12)                                         SFSC3600
 1573           TSS(12) = TSC(3)                                          SFSC3610
 1574           N = LF3                                                   SFSC3620
 1575           LF3 = LF2                                                 SFSC3630
 1576           LF2 = N                                                   SFSC3640
 1577           GO TO 325                                                 SFSC3650
 1578     C                                                               SFSC3660
 1579     C     FSUB2 NG TEST TYPE                                        SFSC3670
 1580      365  TSS(63)=TSS(62)                                           SFSC3680
 1581           IF (TSS(63) - TSS(61) - TDC(50)) 377,366,366              SFSC3690
 1582      366  TSC(3)=TSS(63)                                            SFSC3700
 1583           TSS(60) = TSC(414)                                        SFSC3710
 1584           IF (102 - ND(2)) 370,370,367                              SFSC3720
 1585     C     FC2 TSK NG                                                SFSC3730
 1586      368  IF (TSS(63) - TSS(61) - TDC(50)) 377,370,370              SFSC3740
 1587      370  TSS(62) =(TSS(61)+TSS(63))/D(2)                           SFSC3750
 1588     C
 1589     C     SET ID FOR TSCH TRACE              ISG = 13
 1590     C
 1591           ISG=ND(10)+ND(3)                                          SFSC3759
 1592           CALL TSCH (TSS(62))                                       SFSC3760
 1593           IF (102 - ND(2)) 371,3693,371                             SFSC3770
 1594     C                                                               SFSC3780
 1595     C     SET UP F2 POINT                                           SFSC3790
 1596      371  TSC(10)=TSC(333)                                          SFSC3800
 1597           TSC(11)=TSS(62)                                           SFSC3810
 1598           DO 372 I=1,35                                             SFSC3820
 1599           IN=I+LF2                                                  SFSC3830
 1600      372  TSC(10)=TSC(I+380)                                        SFSC3840
 1601           TSS(12) = TSS(11)                                         SFSC3860
 1602           GO TO 360                                                 SFSC3870
 1603     C                                                               SFSC3880
 1604     C     FIRST F2, ASTR NG, SETUP SEARCH                           SFSC3890
 1605      373  TSS(60)=TSC(I+12 )/TSC(LF1+11 )                           SFSC3900
 1606      376  TSS(60) TSC(414)                                          SFSC3910
 1607           TSS(62) =(TSS(61)+TSS(63))/D(2)                           SFSC3920
 1608     C
 1609     C     SET ID FOR TSCH TRACE              ISG = 14
 1610     C
 1611           ISG=ND(10)+ND(4)                                          SFSC3929
 1612           CALL TSCH (TSS(62))                                       SFSC3930
 1613           IF (ND(2) - 101) 371,374,371                              SFSC3940
 1614     C     FC2 NG, TEST 102                                          SFSC3950
 1615      374  IF (TSS(62) - TSS(61) - TDC(50)) 377,375,375              SFSC3960
 1616      375  TSS(63)=TSS(62)                                           SFSC3970
 1617           TSC(3)=TSS(63)                                            SFSC3980
 1618           IF (102 - ND(2)) 370,376,376                              SFSC3990
 1619     C                                                               SFSC3991
 1620     C          ***CHECK AVE OF PT 1 AND 1-1***                      SFSC3999
 1621      377  TSS(62) = (TSS(62) + TSS(61))/D(2)                        SFSC4000
 1622           CALL TSCH (TSS(62))                                       SFSC4010
 1623           IF (101 - ND(2)) 371,344,371                              SFSC4020
 1624     C                                                               SFSC4030
 1625     C     MINI FOUND SETUP M2, LMI LESS THAN LMAX, TEST FCMAX       SFSC4040
 1626     C     SAVE TMI DATA                                             SFSC4050
 1627      380  IF (TSC(3)-TSS(65))399,399,381                            SFSC4060
 1628      381  TSS(64)=TSC(383)                                          SFSC4070
 1629      3811 DO 382 I=1,35                                             SFSC4080
 1630      382  TSC(I+225)=TSC(I+380)                                     SFSC4090
 1631     C     TEST FOR LOC OF TMI                                       SFSC4110
 1632           IF (TSS(11)-TSS(65)) 383,392,368                          SFSC4120
```

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CARD NO   ****                         CONTENTS                           ****

           383  IF (TSS(8)-TSS(64))385,384,384                           SFSC4130
          C      MOVE F2 TO F1, M1 TO F2                                  SFSC4140
           384  N=LF1                                                     SFSC4150
                LF1=LF2                                                   SFSC4160
                LF2=N                                                     SFSC4170
                TSS(7)=TSS(8)                                             SFSC4180
                TSS(10)=TSS(11)                                           SFSC4190
           391  TSS(8)=TSS(64)                                            SFSC4200
                TSS(11)=TSS(65)                                           SFSC4210
           387  DO 385 I=1,35                                             SFSC4220
                IN=I+N                                                    SFSC4230
           385  TSC(IN)=TSC(I+225)                                        SFSC4240
                GO TO 400                                                 SFSC4260
          C      MOVE M1 TO F3                                            SFSC4270
           386  TSS(9)= TSS(64)                                           SFSC4280
                TSS(12)=TSS(65)                                           SFSC4290
                N=LF3                                                     SFSC4300
                GO TO 387                                                 SFSC4310
           388  IF (TSS(8)-TSS(64))389,390,390                            SFSC4320
          C     MOVE M1 TO F1 LOC                                         SFSC4330
           389  TSS(7)=TSS(64)                                            SFSC4340
                TSS(10)=TSS(65)                                           SFSC4350
                N=LF1                                                     SFSC4360
                GO TO 387                                                 SFSC4370
          C     MOVE F2 TO F3, M1 TO F2                                   SFSC4380
           390  N=LF3                                                     SFSC4390
                LF3=LF2                                                   SFSC4400
                LF2=N                                                     SFSC4410
                TSS(9)= TSS(8)                                            SFSC4420
                TSS(12)=TSS(11)                                           SFSC4430
                GO TO  391                                                SFSC4440
          C                                                               SFSC4450
          C      F2 = M1                                                  SFSC4460
           392  IF (TSS(7)-TSS(9))396,399,393                             SFSC4470
          C      INCREASE F1                                              SFSC4480
           393  TSS(10)=TSS(11) - D(38)*(TSS(11)-TSS(10))                 SFSC4490
          C
          C     SET ID FOR TSCH TRACE                ISG = 15
          C
                ISG=ND(10)+ND(5)                                          SFSC4499
                CALL TSCH (TSS(10))                                       SFSC4500
                IF (IO1 - ND(2)) 394,404,394                              SFSC4510
           394  TSS(7)=TSC(383)                                           SFSC4520
                N=LF1                                                     SFSC4530
           398  DO 395 I=1,35                                             SFSC4540
                IN=I+N                                                    SFSC4550
           395  TSC(IN)=TSC(I+380)                                        SFSC4560
                GO TO 400                                                 SFSC4580
          C      DECREASE F3                                              SFSC4590
           396  TSS(12)=TSS(11) + D(38)*(TSS(12)-TSS(11))                 SFSC4600
          C
          C     SET ID FOR TSCH TRACE                ISG = 16
          C
                ISG=ND(10)+ND(6)                                          SFSC4609
                CALL TSCH (TSS(12))                                       SFSC4610
                IF (IO1 - ND(2)) 397,401,397                              SFSC4620
           397  TSS(9)=TSC(383)                                           SFSC4630
                N=LF3                                                     SFSC4640
                GO TO 398                                                 SFSC4650
          C                                                               SFSC4660
          C     INTERPOLATION NO 2                                        SFSC4670
          C                                                               SFSC4680
           400  IK=ND(1)                                                  SFSC4690
                CALL CG3P (TSS(10),TSS(7))                                SFSC4700
                IF (IL  - ND(2)) 401,408,404                              SFSC4710
          C      EXTRAP LEFT,IL=1 TEST F1,F2,M1                           SFSC4720
           401  IF (TSS(7)-TSS(8))402,403,403                             SFSC4730
           402  IF (TSS(7)-TSS(64))344,406,406                            SFSC4740
           403  IF (TSS(8)-TSS(64))329,406,406                            SFSC4750
          C      EXTRAP RIGHT,IL=3 TEST F2,F3,M1                          SFSC4760
           404  IF (TSS(8)-TSS(9))403,403,405                             SFSC4770
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CARD NO  ****                          CONTENTS                          ****
1704      405  IF (TSS(9)-TSS(6))309,406,406                                SFSC4780
1705      C      USE M1 DATA, MOVE TO 1 LOC                                 SFSC4790
1706      406  DO 407 I=1,35                                                SFSC4800
1707      407  TSC(I+380)= TSC(I+225)                                       SFSC4810
1708           GO TO 399                                                    SFSC4870
1709      C                                                                 SFSC4840
1710      C      FM2 FOUND, SET UP FM2 DATA                                 SFSC4850
1711      408  TSS(66) = TDC(47)                                            SFSC4860
1712      C
1713      C      SET ID FOR TSCH TRACE              ISS = 17
1714      C
1715           ISS=ND(10)+ND(7)                                             SFSC4069
1716           CALL TSCH (TSS(66))                                          SFSC4070
1717           IF (101 - ND(21)) 409,403,409                                SFSC4880
1718      C      TEST TM1,TM2                                               SFSC4890
1719      409  IF (TSS(84)-TSC(383)) 406,410,399                            SFSC4900
1720      410  IF (TSC(256)-TSC(411))399,399,406                            SFSC4910
1721      C                                                                 SFSC4920
1722      C                                                                 SFSC4930
1723      C      SETUP FOR EXIT FROM SUBROUTINE                             SFSC4940
1724      399  DO 3000 I=1,35                                               SFSC4950
1725      3000 TSC(I+3)= TSC(I+380)                                         SFSC4960
1726      C                                                                 SFSC4970
1727      C            ***RESET KSK(MIN,MAX)***                             SFSC4980
1728           TKXMN = TSEC(262)                                            SFSC4990
1729           TKXMX = TSEC(263)                                            SFSC5000
1730      C                                                                 SFSC5010
1731      C                                                                 SFSC9990
1732      C            ***EXIT***                                           SFSC9991
1733      3999 RETURN                                                       SFSC9998
1734           END                                                          SFSC9999
1735      C*****************************************************************
1736      C
1737      C       *****SUBROUTINE BOT*****
1738      C   ***INTERPOLATION/EVALUATION FOR COMPRESSION STRESS, GIVEN (B/T)***
1739      C
1740      C*****************************************************************
1741      C
1742           SUBROUTINE BOT                                               BOT 0010
1743      C       FC( B/T)  CALC. SUBR.                                     BOT 0020
1744      C                                                                 BOT 0030
1745      C      REVISION -- 01-10-66 -- NEW FORMAT                         BOT 0040
1746      C                                                                 BOT 0050
1747      C                                                                 BOT 0060
1748      C         *** REVISION -- 05-29-68-- ADD PLATE LOGIC ***          BOT 0070
1749      C                                                                 BOT 0080
1750      C      GIVES FC +,- EPS.                                          BOT 0090
1751      C      IK=1 ,FC AT B/T                                            BOT 0100
1752      C      IK=2 ,FC AT (B/T)FC = BI/TSK(IFC)                          BOT 0110
1753      C                                                                 BOT 0120
1754      C                                                                 BOT 0140
1755           COMMON T(2060),D(2060),CD(2000),ND(100)                      BOT 0150
1756           DIMENSION DC(100),TDC(200),TSC(420),TSS(100),TBT(4)          BOT 0170
1757           EQUIVALENCE (TDC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961)),  BOT 0210
1758          1(TKXMX,T(1405)),(TBT(1),T(1317))                             BOT 0211
1759           EQUIVALENCE (DC(1),D(1401)),(CKSK,D(1307)),                  BOT 0220
1760          1(DTC,D(1482)),(CNSID,D(1401))                                BOT 0221
1761           EQUIVALENCE (IL,ND(40)),(IK,ND(39)),(IKI,ND(32)),(IKK,ND(31)),   BOT 0230
1762          1(I,ND(30))                                                   BOT 0231
1763      C                                                                 BOT 0270
1764      C                                                                 BOT 0280
1765      C                                                                 BOT 0290
1766      C         *** SETUP CONSTANTS FOR STR, PL, HC ANALYSIS ***        BOT 0300
1767      560  TBT(2) = TDC(194)/TSC(2)                                     BOT 0310
1768           TBT(3) = D(1)                                                BOT 0320
1769           TBT(4) = DTC                                                 BOT 0330
1770           IF (CNSID - D(1)) 561,562,563                                BOT 0340
1771      C                                                                 BOT00349
1772      C          *** STR ***                                            BOT 0350
1773      561  TBT(2) = DC(3)                                              BOT 0360
1774           TBT(3) = TSC(412)                                            BOT 0370
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CARD NO    ****                          CONTENTS                          ****
  1775     C                                                                BOT00370
  1776     C        *** STR, PL.  TC=0.0 ***                                BOT 0380
  1777      562   TBT(4) = DC(3)                                           BOT 0390
  1778            IF (IKI - ND(1)) 569,560,60                              BOT00395
  1779     C                                                                BOT 0400
  1780     C          **** TEST FOR TYPE OF B/T ANALYSIS. IKI=1 OR 2. ****  BOT 0410
  1781      563   IF (IKI - ND(1)) 56,56,60                                BOT00420
  1782     C                                                                BOT 0430
  1783     C        **** IKI=1.  CALC FC FOR GIVEN B/T AND TSKIN ****       BOT 0440
  1784     C              CALC ALPHA CORRECTION FOR B/T(PHYSICAL)--STR-PL-HC BOT 0450
  1785      56    TBT(3) = TSC(2)/TSC(409)                                 BOT 0460
  1786            TBT(2) = TBT(4).TBT(3) + D(1)                            BOT 0470
  1787            TBT(1) = SQRT (D(3)*TBT(2)*(TBT(2) + D(1)) + D(1))       BOT 0480
  1788            TSC(409) = TSC(409)/TBT(1)                               BOT 0490
  1789      569   IF (TDC(56) - TSC(409)) 41,531,531                       BOT 0500
  1790     C                                                                BOT 0510
  1791     C      INTERPOLATE                                               BOT 0520
  1792      41    I=ND(1)                                                  BOT 0530
  1793            IF(TDC(I+12) - TSC(409))43,42,44                         BOT 0540
  1794     C                                                                BOT 0550
  1795     C     INTERPOLATE 0 TO FC1                                       BOT 0560
  1796      43    TSC(30:       (54)*TDC(57)/TSC(409)*TDC(57)/TSC(409)     BOT 0570
  1797            GO TO 53                                                 BOT 0580
  1798     C                                                                BOT 0590
  1799     C     USE FC1                                                    BOT 0600
  1800      42    TSC(381) = TDC(1)                                        BOT 0610
  1801            TSC(409) = TDC(I+12)                                     BOT 0620
  1802            GO TO 98                                                 BOT 0630
  1803     C                                                                BOT 0640
  1804      44    I=I+ND(1)                                                BOT 0650
  1805            IF (TDC(I+12) - TSC(409))45,42,44                        BOT 0660
  1806      45    TSC(414) =  TDC( I-1)                                    BOT 0670
  1807            TSC(416) = TDC(I)                                        BOT 0680
  1808            TSC(4     - TDC(I+11)/TSC(409)                           BOT 0690
  1809            TSC(419) = TDC(I+12)/TSC(409)                            BOT 0700
  1810            TSC(415) = TSC(414)+ ((TSC(416)-TSC(414))*(TSC(417) - D(1))  )/(TSCBOT 0710
  1811           1(417)-TSC(419)))                                         BOT 0720
  1812     C                                                                BOT 0730
  1813            CALL SS (TSC(415))                                       BOT 0740
  1814            TSC(418)= TDC(45)/TSC(409)                               BOT 0750
  1815     C                                                                BOT00750
  1816     C      INTERPOLATE FOR FC1                                       BOT 0760
  1817            IK=ND(2)                                                 BOT 0770
  1818            CALL COSP (TSC(414),TSC(417))                            BOT 0780
  1819            TSC(381) = TDC(47)                                       BOT 0790
  1820            CALL SS (TSC(381))                                       BOT 0800
  1821            TSC(420) = TDC(45)                                       BOT 0810
  1822            TSC(408)=ABS(TSC(420)-TSC(409))                          BOT 0820
  1823            TSC(407) = TSC(381)                                      BOT 0830
  1824            KK=ND(2)                                                 BOT 0840
  1825            TSC(413) = -D(38)*TDC(50)                                BOT 0850
  1826            IF (TSC(409)-TSC(420)) 46,54,4.                          BOT 0860
  1827      46    TSC(413) = D(38)*TDC(50)                                 BOT 0870
  1828            KK=ND(1)                                                 BOT 0880
  1829      47    TDC(51) = TSC(381)+TSC(413)                              BOT 0890
  1830            CALL SS (TDC(51))                                        BOT 0900
  1831            IF (KK-ND(2))  48,49,48                                  BOT 0910
  1832     C      KK=1 FC TO RT OF FC1                                      BOT 0920
  1833     C                                                                BOT 0930
  1834      48    IF (TSC(409) - TDC(45)) 51,50,52                         BOT 0940
  1835      51    TSC(381) = TDC(51)                                       BOT 0950
  1836            TSC(420) = TDC(45)                                       BOT 0960
  1837            GO TO 47                                                 BOT 0970
  1838     C                                                                BOT 0980
  1839      50    TSC(381) = TDC(51)                                       BOT 0990
  1840            GO TO 54                                                 BOT 1000
  1841     C                                                                BOT01009
  1842     C      KK = 2  FC TO LEFT OF FC1                                 BOT 1010
  1843      49    IF (TSC(409)-TDC(45)) 52,50,51                           BOT 1020
  1844     C                                                                BOT 1030
  1845     C     SECOND ST. LINE INTERPOLATION                              BOT 1040
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CARD NO **** CONTENTS ****

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 52  TSC(381)=TSC(381)+((TDC(51)-TSC(391))*(TSC(420)-TSC(409))/(TSC(420BOT 1050
    1)-TDC(45)))                                                      BOT 1060
C                                                                     BOT 1070
     CALL SS (TSC(381))                                               BOT 1080
     IF (TSC(408) - ABS (TDC(45) - TSC(409))) 55,54,54                BOT 1090
 55  TSC(381) = TSC(407)                                              BOT 1100
C                                                                     BOT01109
C      TO SETUP EXIT                                                  BOT 1110
~30  GO TO 53                                                         BOT 1120
C                                                                     BOT 1130
C                                                                     BOT 1140
C     IK=2 , FIND FC AT B/T MIN = B1/TSK                              BOT 1150
C     R = (B/T)FC /(B1/TSK)                                           BOT 1160
 60  I=ND(1)                                                          BOT 1170
C                                                                     BOT 1180
 601 TSC(414)=TDC(I)                                                  BOT 1190
     CALL BOTC (TSC(414),TSC(417))                                    BOT 1200
C                                                                     BOT01209
C     TEST POINT 1                                                    BOT 1210
     IF (TSC(417) - D(1)) 61,61,62                                    BOT 1220
C                                                                     BOT 1230
C     FC IS LESS THAN F(1), SOLVE FOR FC(RCOD)                        BOT 1240
 61  TSC(414) = TDC(50)/D(2)                                          BOT01250
     CALL BOTC (TSC(414),TSC(417))                                    BOT 1260
     IF (D(1) - TSC(417)) 610,64,64                                   BOT 1270
 610 TSC(416) = TSC(414) + TDC(50)                                    BOT01280
     CALL BOTC (TSC(416),TSC(419))                                    BOT 1290
     IF (D(1) - TSC(419)) 611,65,66                                   BOT 1300
 611 TSC(414) = TSC(416)                                              BOT 1310
     TSC(417) = TSC(419)                                              BOT 1320
     GO TO 610                                                        BOT 1330
C                                                                     BOT 1340
C     DO POINT 3                                                      BOT 1350
 62  I=I+ND(1)                                                        BOT 1360
     TSC(416)=TDC(I)                                                  BOT 1370
     CALL BOTC (TSC(416),TSC(419))                                    BOT 1380
     IF (D(1)-TSC(419)) 63,65,66                                      BOT 1390
 63  TSC(417)=TSC(419)                                                BOT 1400
     TSC(414)=TSC(416)                                                BOT 1410
     IF (ND(12) - I) 64,64,62                                         BOT 1420
 64  TSC(381)=TSC(414)                                                BOT 1430
     GO TO 53                                                         BOT 1440
 65  TSC(381)=TSC(416)                                                BOT 1450
     GO TO 53                                                         BOT 1460
C                                                                     BOT01469
C     R3 LESS THAN 1.0, FIRST INTERPOLATION                           BOT 1470
 66  TSC(415) = (TSC(414)+TSC(416))/D(2)                              BOT 1480
C                                                                     BOT 1490
     CALL BOTC (TSC(415),TSC(418))                                    BOT 1500
     IF (TSC(418) - D(1)) 69,67,68                                    BOT 1510
 67  TSC(381) =TSC(415)                                               BOT 1520
     GO TO 53                                                         BOT 1530
 68  TSC(414)=TSC(415)                                                BOT 1540
     TSC(417)=TSC(418)                                                BOT 1550
     GO TO 70                                                         BOT 1560
 69  TSC(416)=TSC(415)                                                BOT 1570
     TSC(419)=TSC(418)                                                BOT 1580
 70  TSC(415)=TSC(414) + ((TSC(416)-TSC(414))*(TSC(417)- D(1))/(TSC(417BOT 1590
    1) - TSC(419)))                                                   BOT 1600
C                                                                     BOT 1610
     CALL BOTC (TSC(415),TSC(418))                                    BOT 1620
     IF (ABS(TSC(418) - D(1)) - D(64)/D(10)) 67,67,700                BOT01625
 700 IK = ND(2)                                                       BOT01630
     CALL CG3P (TSC(414),TSC(417))                                    BOT 1640
C                                                                     BOT 1650
     TSC(381) = TDC(47)                                               BOT 1660
C                                                                     BOT 1661
C          ****USE POINT 2 IO INTERPOLATED FC+- OR 0 (8-18-71)*****   BOT 1662
     IF (TSC(381)) 67,67,701                                          BOT01665
 701 CALL BOTC (TSC(381),TSC(409))                                    BOT01670
     TSC(413) = TSC(409) - D(1)                                       BOT01675
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CARD NO  ****                          CONTENTS                          ****
1917          IF (ABS(TSC(413)) - D(64)/D(10)) 54,54,702                 BOT01670
1918     702  IF (TSC(413)) 71,54,72                                      BOT01680
1919     C                                                                BOT01689
1920     C     FCI TO LEFT OF FCX                                         BOT 1690
1921      71   KK=ND(2)                                                   BOT 1700
1922           TSC(413) = (TSC(414) - TSC(381))/D(10)                     BOT01710
1923      81   TSC(416)=TSC(2 )                                           BOT 1720
1924           TSC(419)=TSC(409)                                          BOT 1730
1925           GO TO 73                                                   BOT 1740
1926     C                                                                BOT01749
1927     C     FCI TO RIGHT OF FCX                                        BOT 1750
1928      72   KK=ND(1)                                                   BOT 1760
1929           TSC(413) = (TSC(416) - TSC(381))/D(10)                     BOT01770
1930      80   TSC(414)=TSC(381)                                          BOT 1780
1931           TSC(417)=TSC(409)                                          BOT 1790
1932      73   TSC(381)=TSC(381)+TSC(413)                                 BOT 1800
1933     C                                                                BOT 1810
1934     C          *** TEST FOR FC NEG. ***                              BOT 1820
1935           IF (TSC(381)) 730,730,731                                  BOT 1830
1936     730  TSC(381) = TSC(381) - TSC(413)                             BOT 1840
1937           GO TO 53                                                   BOT 1850
1938     C                                                                BOT 1860
1939     731  CALL BOTC (TSC(381),TSC(409))                              BOT 1870
1940           IF (ABS(TSC(409) - D(1)) - D(64)/D(10)) 54,54,732          BOT01875
1941     732  IF (KK - ND(1)) 74,74,82                                   BOT01880
1942     C                                                                BOT01889
1943     C     KK=1 F(3)                                                  BOT 1890
1944      74   IF (TSC(409) - D(1)) 70,54,80                              BOT 1900
1945      70   TSC(419)=TSC(409)                                          BOT 1910
1946           TSC(416)=TSC(381)                                          BOT 1920
1947           GO TO 78                                                   BOT 1930
1948     C                                                                BOT01939
1949     C     LEFT, KK=2                                                 BOT 1940
1950      82   IF (D(1)-TSC(409)) 83,54,81                                BOT 1950
1951      83   TSC(414)= TSC(381)                                         BOT 1960
1952           TSC(417)=TSC(409)                                          BOT 1970
1953     C                                                                BOT01979
1954     C     SETUP PT. 2 FOR SECOND INTRP                               BOT 1980
1955      78   TSC(415) = (TSC(414) + TSC(416))/D(2)                      BOT 1990
1956     C                                                                BOT 2000
1957           CALL BOTC (TSC(415),TSC(418))                              BOT 2010
1958           IF (ABS(TSC(418) - D(1)) - D(64)/D(10)) 67,67,780          BOT02015
1959     780  CALL CG3P (TSC(414),TSC(417))                              BOT02020
1960           TSC(381)=TDC(47)                                           BOT 2030
1961     C                                                                BOT 2040
1962     C     SET UP EXIT                                                BOT 2050
1963     C          *** B/T=BASIC B/T WITH ALPHA=1.0 ***                  BOT 2060
1964      53   CALL SS (TSC(381))                                         BOT 2070
1965      54   TSC(409)=TDC(45)                                           BOT 2080
1966     C                                                                BOT02089
1967     C     TEST WITH MAX FC(1)                                        BOT 2090
1968      88   IF (TDC(55)-TSC(381)) 531,549,549                          BOT 2100
1969     C                                                                BOT02109
1970     C     USE MAX FC(1)                                              BOT 2110
1971     531  TSC(381) = TDC(55)                                          BOT 2120
1972           TSC(409) = TDC(56)                                         BOT 2130
1973     C                                                                BOT 2140
1974     C                                                                BOT 2150
1975     C     EXIT                                                       BOT 2160
1976     549  RETURN                                                     BOT 2170
1977          END                                                        BOT 2180
1978     C*************************************************************************
1979     C
1980     C       *****SUBROUTINE BOTC*****
1981     C   ***PLATE BUCKLING (B/T) EVALUATION***
1982     C
1983     C*************************************************************************
1984     C
1985          SUBROUTINE BOTC (SFCI,RBTI)                                BOTC0010
1986     C    *****SUBR. TO DETERMINE RATIO OF (B/T) ACTUAL/REQD.*****    BOTC0020
1987     C                                                               BOTC0030
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CARD NO  ****                          CONTENTS                          ****
 1988    C     ***REVISION--04-08-69-- ADD LOGIC FOR TSTR(MIN)=FIX*TSKIN1****   BOTC0040
 1989    C          **** 07-27-68 -- NEW SUBR B/T CALC GIVEN TC                  BOTC0050
 1990    C        *** REQD CONSTANTS SETUP BY SUBR BOT. ***                      BOTC0060
 1991    C                                                                       BOTC0070
 1992    C                                                                       BOTC0090
 1993          COMMON T(2060),D(2060),CD(2000),ND(100)                          BOTC0100
 1994          DIMENSION DC(100),TDC(200),TSC(420),TSS(100),TWT(400),TSEC(300), BOTC0120
 1995         1TBT(4)                                                           BOTC0130
 1996          EQUIVALENCE (TDC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961)),  BOTC0180
 1997         1(SFC,T(1387)),(BBOT,T(1365)),(TBT(1),T(1317))                    BOTC0181
 1998          EQUIVALENCE (DC(1),D(1401)),(STRMN,D(37)),(CNSID,D(48)),         BOTC0190
 1999         1(STRRO,D(456)),(STRSK,D(455))                                    BOTC0191
 2000          EQUIVALENCE (TSEC(1),CD(1501)),(TWT(1),CD(1101))                 BOTC0200
 2001    C                                                                       BOTC0230
 2002    C                                                                       BOTC0240
 2003    C       *** SETUP FCI, EVAL. SS FOR B/T BASIC ***                       BOT
 2004     100  SFC=SFCI                                                        BOTC0260
 2005          CALL SS (SFC)                                                    BOTC0270
 2006    C                                                                       BOTC0280
 2007    C         *** TEST FOR STR CONST. ***                                   BOTC0290
 2008          IF (CNSID) 110,130,110                                           BOTC0300
 2009    C                                                                       BOTC0310
 2010    C            *** CALC B/T PHYSICAL ***                                  BOTC0320
 2011     110  ATSK = TBT(3)/SFC*TDC(72) - TBT(2)                              BOTC0330
 2012          TBT(1) = TSC(2)/ATSK                                             BOTC0340
 2013    C                                                                       BOTC0350
 2014    C       *** TEST FOR CONST. -- TBT(4) = TCORE FOR HP, 0 FOR STR, PL.** BOTC0360
 2015     111  IF (TBT(4)) 120,129,120                                          BOTC0370
 2016    C                                                                       BOTC0380
 2017    C        ** CALC B/T ALLOWABLE -- ALPHA=F(TC,TSK) **                    BOTC0390
 2018     120  APNL = TBT(4)/ATSK + D(1)                                       BOTC0400
 2019          ALPHA = D(3)*APNL*(APNL + D(1)) + D(1)                           BOTC0410
 2020          BBOT = BBOT*SQRT (ALPHA)                                         BOTC0420
 2021     129  RBTI = BBOT/TBT(1)                                              BOTC0430
 2022    C                                                                       BOTC0431
 2023    C      ****TEST MAGNITUDE OF RATIO***                                   BOTC0432
 2024          IF (RBTI - D(1)) 1290,1298,1291                                  BOTC0433
 2025     1290 IF (DC(61) - RBTI) 1298,1298,1299                                BOTC0434
 2026     1291 IF (RBTI - DC(60)) 1298,1298,1299                                BOTC0435
 2027     1298 RBTI = D(1)                                                      BOTC0436
 2028    C                                                                       BOTC0439
 2029     1299 GO TO 199                                                        BOTC0440
 2030    C                                                                       BOTC0450
 2031    C      **** STR.  DETERMINE MIN STR TBAR.  TEST FOR CONSTANT TSTR.***  BOTC0460
 2032     130  IF (STRSK) 110,110,131                                           BOTC0470
 2033     131  ATSK = TDC(72)/SFC/(TWT(305)/TSC(2)*STRRO + D(1))                BOTC0480
 2034          TBT(1) = TSC(2)/ATSK                                             BOTC0490
 2035          GO TO 129                                                        BOTC0500
 2036    C                                                                       BOTC0510
 2037    C                                                                       BOTC0520
 2038    C     ***EXIT*** RBTI= RATIO OF ALLOW(B/T) TO PHYSICAL B/T **           BOTC0530
 2039     199  RETURN                                                           BOTC0540
 2040          END                                                              BOTC0550
 2041    C*************************************************************************
 2042    C
 2043    C       *****SUBROUTINE TSCH*****
 2044    C   ***SEARCH LEVEL 3 CONTROL - OPTIMUM T(SKIN), A(STR)***
 2045    C
 2046    C*************************************************************************
 2047    C
 2048          SUBROUTINE TSCH (SFCI)                                           TSCH0010
 2049    C                                                                      TSCH0011
 2050    C     T-SKIN SUBROUTINE                                                TSCH0020
 2051    C                                                                      TSCH0030
 2052    C                                                                      TSCH0031
 2053    C     ***REVISION 11-29-72  SETUP AN ID COUNT FOR TRACING WHERE STBAR   TSCH0032
 2054    C               SUBROUTINE HAS BEEN CALL FROM IN THIS SUBROUTINE. ID   TSCH0033
 2055    C               IS PRINTED FROM PRTBK                                ****TSCH0034
 2056    C                                                                      TSCH0035
 2057    C                                                                      TSCH0110
 2058    C     IDSK  1=SEARCH, 2=TWF(CONST), 3=TSKI(INPUT)                      TSCH0120
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CARD NO  ****                          CONTENTS                          ****
  2058     C     RETURN ID, ISKAD 1=FC OK, 2=FC NG, 3= LI=LMAX,FC OK      TSCH0130
  2059     C                ISKBD 1=TBAR NG, 2=ASTR NG, 3=LI LESS THAN LMIN TSCH0140
  2061     C                                                              TSCH0150
  2062     C      ID FROM STBAR=IL2.  1=OK,  2=L=LMAX,  3=L NG,  4=ASTR NG TSCH0160
  2063     C                                                              TSCH0170
  2064     C     GIVEN FC, BSTR, YMIN, TVF                                TSCH0180
  2065     C                                                              TSCH0190
  2066     C                                                              TSCH0210
  2067           COMMON T(2060),D(2000),CD(2000),ND(180)                  TSCH0220
  2068           COMMON /IPRINT/ IP(80)
  2069     C                                                              TSCH0230
  2070           DIMENSION                                    DC(100),    TSCH0240
  2071          1TDC(200),TSC(420),TSS(100),TWT(400),TSEC(300),           TSCH0250
  2072          2DBKP(4)                                                  TSCH0260
  2073     C                                                              TSCH0270
  2074           EQUIVALENCE (TDC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961)),  TSCH0280
  2075          1(DC(1),D(1401)),(TWT(1),CD(1101)),(TSEC(1),CD(1501)),    TSCH0281
  2076          2(DBKP(1),D(574)),(STAFN,D(361)),(SKAN,D(370)),(STAPX,D(371)),    TSCH0282
  2077          3(STLMN,D(375)),(STLMX,D(376)),(HSTMN,D(377)),(STFMN,D(384)),     TSCH0283
  2078          4(CNSID,D(461)),(TKOMX,TDC(65)),(TKKMN,TDC(67)),(STRSK,D(455)),   TSCH0284
  2079          5(BOTHR,TSEC(248)),(BOTFR,TSEC(249)),(BOTHC,TSEC(250)),   TSCH0285
  2080          6(BOTFC,TSEC(251)),(CCRSH,TSEC(252)),(CCRSF,TSEC(253)),   TSCH0286
  2081          7(IDSK,ND(511)),(ISK2,ND(48)),(ISK1,ND(45)),(IL,ND(40)),(IK,ND(39)),TSCH0287
  2082          8(IL1,ND(34)),(IL2,ND(33)),(IL3,ND(32)),(IBT,ND(72)),(IMX,ND(71)),  TSCH0288
  2083          9(LT1,ND(28)),(LT2,ND(27)),(LT3,ND(20)),(ISTB,ND(87)),(IN,ND(30))  TSCH0289
  2084          A,(I,ND(29)),(N,ND(31))                                   TSCH0290
  2085     C                                                              TSCH0300
  2086     C                                                              TSCH0310
  2087     C                                                              TSCH0370
  2088     C                                                              CR000100
  2089     C            ***SAME DATA. TSEC(221,224),TWT(305,307),TDC(194),IMX,IBT*CR000101
  2090      98   IMXO = IMX                                               CR000102
  2091           IBTO = IBT                                               CR000103
  2092           TSEC(255) = TSEC(221)                                    CR000104
  2093           TSEC(256) = TSEC(224)                                    CR000105
  2094           TSEC(257) = TWT(305)                                     CR000106
  2095           TSEC(258) = TWT(307)                                     CR000107
  2096           TSEC(259) = TDC(194)                                     CR000108
  2097     C                                                              CR000109
  2098           IR001 = 0                                                CR000109
  2099     C      SETUP FC DATA, ASTRMIN                                   TSCH0380
  2100      99   TSC(381)=SFCI                                            TSCH0390
  2101           CALL 95 (TSC(381))                                       TSCH0400
  2102           TSC(400) =TDC(37)                                        TSCH0410
  2103           TSC(401) =TDC(38)                                        TSCH0420
  2104           TSC(402) =TDC(44)                                        TSCH0430
  2105           TSC(409) =TDC(95)                                        TSCH0440
  2106           TSC(410) =TDC(58)*TSC(409)                               TSCH0450
  2107           BOTHR = TSC(410)                                         10000171
  2108           BOTFR = TSC(409)*TSEC(221)*TSEC(222)                     10000172
  2109           TWT(312) = BOTFR                                         10000173
  2110     C                                                              TSCH0460
  2111     C                                                              CR000180
  2112     C            **SETUP REQD (B/T) FOR STR FLANGE AND WEBS**      CR000181
  2113      5001 BOTHC = (CCRSH/TSC(381))**1.333* TSEC(254)               CR000182
  2114           BOTFC = (CCRSF/TSC(381))**1.333*TSEC(254)                CR000183
  2115     C                                                              CR000184
  2116     C            ***TEST FOR CRITICAL B/T***                       CR000185
  2117           IF (BOTHR - BOTHC) 5002,5002,5004                        CR000186
  2118      5002 IF (BOTFC - BOTFR) 5003,5019,5019                        CR000187
  2119      5003 BOTFR = BOTFC                                            CR000188
  2120           TWT(312) = BOTFR                                         CR000189
  2121           GO TO 5006                                               CR000190
  2122      5004 BOTHR = BOTHC                                            CR000191
  2123           TSC(410) = BOTHR                                         CR000192
  2124           IF (BOTFC - BOTFR) 5005,5006,5006                        CR000193
  2125      5005 BOTFR = BOTFC                                            CR000194
  2126           TWT(312) = BOTFR                                         CR000195
  2127     C                                                              CR000196
  2128     C            ***SETUP CONTROL DATA***                          CR000197
  2129      5006 TSEC(221) = BOTFR/BOTHR                                  CR000198
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CARD NO   ****                      CONTENTS                          ****

              TSEC(224) = D(1) + TSEC(221)*TSEC(222)                  CR000199
              TMT(305) = HSTMN*TSEC(224) + STFMN*TSEC(223)            CR000200
              TOC(194) = TMT(305)*STFMN + TSEC(225)                   CR000201
              TMT(307) = TMT(309)                                     CR000202
              IF (D(1) - STRFN) 5007,5003,5019                        CR000203
        C             **Z(2) TYPE**                                   CR000204
         5007 IBT = ND(1)                                             CR000205
              IF(TMT(311) - TMT(309)*TSEC(221)) 5003,5009,5009        CR000206
         5008 IBT = ND(2)                                             CR000207
        C             **Z(2) AND Z(1) TYPE**                          CR000208
         5009 IMX = ND(2)                                             CR000209
              IF(TMT(310) - TMT(309)*TSEC(221)) 5019,5019,5011        CR000210
         5011 IMX = ND(1)                                             CR000211
              TMT(307) = TMT(310)/TSEC(221)                           CR000212
        C                                                             CR000213
        C                                                             CR000214
        C       T-BAR, T(B/T)                                         TSCH0470
         5019 TSC(385) = TDC(72)/TSC(381)                             10000190
              TSS(57) = TSC(2)/TSC(403)                               TSCH0490
        C                                                             TSCH0500
        C                                                             TSCH0550
        C             *** TEST FOR STR ***                            TSCH0560
         5029 IF(CNSID) 653,5000,653                                  TSCH0570
        C                                                             TSCH0580
        C               *** STR ***                                   TSCH0590
         5000 IF (TSC(385) - TSS(57)) 500,500,501                     TSCH0600
        C                                                             TSCH0610
        C        TBAR LESS THAN T(BOT),EXIT,ID=2.1                    TSCH0620
         500  ISK1= ND(2)                                             TSCH0630
              ISK2 = ND(1)                                            TSCH0640
              IF(DBKP(1)) 1501,1501,1500                              TSCH0641
         1500 IK = ND(1)                                              TSCH0642
              IF(IP(33))5101,5101,1501
         5101 CALL PRTBK
         1501 CONTINUE                                                TSCH0644
              GO TO 599                                               TSCH0650
        C                                                             1000026?
        C         TOT. AREA, MIN STR GEOM. SETUP REGION ID            TSCH0660
         501  TSC(382) = TSC(2)*TSC(305)                              TSCH0670
              TSS(43)= TOC(194)                                       TSCH0690
              TSS(44)=STRMN                                           TSCH0700
              TSS(45)=HSTMN                                           TSCH0710
              TSS(47)= TSEC(222)*HSTMN*TSEC(221)                      TSCH0720
              IF (STFMN - TSS(47)) 640,645,645                        CR000301
          640 TSS(47) = STFMN                                         CR000302
          645 TSS(46) = STFMN*TSEC(223)                               CR000303
        C                                                             TSCH0740
        C             ** TEST FOR STR  ID=0.0  **                     TSCH0750
              IF (CNSID) 650,5010,650                                 TSCH0760
         650  TSS(49) = TSS(43)*TSEC(232)/TSC(2)                      TSCH0770
              TSS(49) = TSC(385) - TSS(49)                            TSCH0780
              TSC(391) = TSS(43)                                      TSCH0790
        C                                                             TSCH0800
        C                TRST IS FOR SEARCH, TVF, OR TSK(INPUT)       TSCH0810
         655  IF (ND(2) - IDSK) 652,651,652                           TSCH0820
        C                *** 651=TVF, 652=INPUT TAK AND SEARCH        TSCH0830
         651  TSS(57) = TSS(99)                                       TSCH0840
              TSS(49) = TSS(99)                                       TSCH0850
         652  TSS(41) = TSS(49)                                       TSCH0860
              TSS(42) = TSS(49)                                       TSCH0870
              TSS(48) = DC(3)                                         TSCH0880
              ILI = ND(1)                                             TSCH0890
        C                                                             TSCH0891
        C     SET ID FOR STBAR TRACE                      ISTB = 1    TSCH0892
        C                                                             TSCH0893
              ISTB = ND(1)                                            TSCH0894
              CALL STBAR (TSS(49))                                    TSCH0900
              IF(DBKP(1)) 1653,1653,1652                              TSCH0901
         1652 IK = ND(1)                                              TSCH0902
              IF(IP(33))5103,5103,1653
         5103 CALL PRTBK
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CARD NO **** CONTENTS ****

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 1053 CONTINUE                                                   TSCH0904
      GO TO 599                                                  TSCH0910
C                                                                TSCH0920
C                                                                TSCH0930
C                                                                TSCH0940
C          **** TEST FOR PL, HP, FDH ****                        TSCH0950
  0**  IF (D(2) - CNSID) 654,656,656                             TSCH0960
C             *** FDH -- B(STR) = 1.0 *** FINAL T(BAR)=TSK + T(BOND)  TSCH0970
  654  TSS(49) = TSC(305)                                        TSCH0980
      TSC(301) = DC(3)                                           TSCH0990
      GO TO 655                                                  TSCH1000
C                                                                TSCH1010
C           ** PL, HP.  NO B/T TEST --- SETUP TSKIN **           TSCH1020
  656  TSS(57) = TSC(305) - TDC(194)*TSEC(232)/TSC(2)            TSCH1030
      GO TO 501                                                  TSCH1040
C                                                                TSCH1050
C        *******DELETE CARDS --275-370 FOR STRGO SUBR.(4-05-69)******* TSCH1060
C                                                                TSCH1070
C        ****SETUP STR DATA WITH SUBR STRGO =F(FCCR(1)) ****     TSCH1080
C       *** K = D(455) OR D(456)  *** CHANGED ON 11/13/72 NEXT 31-CARDSTSCH1081
C       *** CHANGING MIN GAGE OF STRINGER  T(STR)= F(K*TSKIN) *** TSCH1082
C       *** 1ST TEST TO SEE TSTR = CONSTANT ***                  TSCH1083
 5010 IF (STRSK) 700,700,701                                     TSCH1085
C       *** SAVE INPUT MIN. STG. GAGE  ***                       TSCH1086
  701 TMT(325) = STRMN                                           TSCH1087
      IRGO1= ND(1)                                               TSCH1088
C       *** CALC. NEW MIN. STG. GAGE BASED STRSK AND BULKING CRITICAL  TSCH1088
C            SKIN ***                                            TSCH1088
      TMT(326) = STRSK*TSS(57)                                   TSCH1090
      TMT(327) = D(1)                                            TSCH1091
      I~ ( TMT(326) -STRMN) 702,702,703                          TSCH1092
  702 T( 1(326)= STRMN                                           TSCH1093
      GO TO 700                                                  TSCH1094
  703 STRMN = TMT(326)                                           TSCH1095
      TMT (327) = TMT(326)/TMT(325)                              TSCH1096
  707 TMT(304) = TMT(304)*TMT(327)                               T:..1097
      TMT(307) = TMT(307)/ TMT(327)                              TSCH1098
      DO 704 I=1,2                                               TS.H1099
      TSS (I+42) = TSS(I+42)*TMT(327)                            TSCH1110
      TMT (I+307) = TMT(I+307)/TMT(327)                          TSCH1.11
      TMT (I+309) = TMT(I+309)/TMT(327)                          TSCH1112
  704 CONTINUE                                                   TSCH1113
  700 CALL STRGO                                                 T'..H1114
      IF (DBKP(1)) 1503,1503,1502                                TS..H1115
 1502 IK = ND(1)                                                 TSCH1116
      IF(IP(33))5105,5105,1503
 5105 CALL PRTBK
 1503 CONTINUE                                                   TSCH1118
C       *** IF IRGO2 =2 STR. DATA HAS .UST BEEN RESET EXIT       TSCH1119
      IF (IRGO1 - ND(1)) 711,711,5991                            TSCH1120
  711 IF (ND(2)-IDSK) 503,600,504                                TSCH1121
C        SETUP SEARCH -- TEST TYPE 1=SEARC., 2=T.F, 3=INPUT      TSCH1110
C      ID=3  INPUT TSK=CONSTANT. NO KSK RESTRICTIONS. TEST TSK(B/T)  TSCH1130
  503  TSS(49)=SKMN                                              TSCH1140
      IF (TSS(57)- TSS(49)) 0/1,601,500                          TSCH1150
C                                                                TSCH1160
C        TSK= TVF  OR INPUT TSK=CONSTANT                         TSCH1170
  601  TSS(41)=TSS(49)                                           TSCH1200
      TSS(42)=TSS(49)                                            TSCH1210
      TSS(48)=DC(3)                                              TSCH1220
      GO TO 514                                                  TSCH1230
C                                                                TSCH1231
C      REVISION 11-29-72  RELOCATED THE NEXT 2 CARDS FROM IN FRONT OF  TSCH1232
C                STATEMENT 601 TO BEHIND THE GO TO 514 CARD      TSCH1233
C                KSMIN*TBAR .LE. TVF .LE. KSMAX*TBAR             TSCH1234
C                                                                TSCH1235
  600  TSS(57)=TSS(99)                                           TSCH1236
      TSS(49)=TSS(99)                                            TSCH1237
C                                                                TSCH1240
C        OPT SEARCH FOR TSK  -- ID=1                             TSCH1250
  504  TSS(42) = TSC(305)*T100K                                  TSCH1260
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CARD NO	****	CONTENTS	****
2272	505	TSS(41) = TSC(385)*TKKMN	TSCH1270
2273		IF (TSS(41)-SKMN) 506,507,507	TSCH1280
2274	506	TSS(41) = SKMN	TSCH1290
2275	507	IF (TSS(41)- TSS(57)) 508,509,509	TSCH1300
2276	508	TSS(41) = TSS(57)	TSCH1310
2277	509	TSS(49) = TSS(41)	TSCH1320
2278		TSS(48) = TSS(42)-TSS(41)	TSCH1330
2279		IF (TSS(48)) 500,514,514	TSCH1340
2280	C		TSCH1350
2281	C		TSCH1360
2282	C	START SEARCH TSS(45)= TSK(0)	TSCH1370
2283	514	IL1=ND(1)	TSCH1380
2284	C		TSCH1381
2285	C	SET ID FOR STBAR TRACE ISTB = 2	TSCH1382
2286	C		TSCH1383
2287		ISTB = ND(2)	TSCH1384
2288		CALL STBAR (TSS(49))	TSCH1390
2289		ISK1 = ND(2)	TSCH1400
2290		IF (IL2-ND(3)) 5130,516,515	TSCH1410
2291	5130	IF(IL2-ND(2)) 513,517,513	TSCH1420
2292	C		TSCH1430
2293	C	TSKO OK SET UP ID. 513=L LESSTHAN LMAX ID=1, 517=L1=LMAX ID=3	TSCH1440
2294	513	ISK1=ND(1)	TSCH1450
2295		GO TO 518	TSCH1460
2296	C		TSCH1470
2297	C	L1 LESS THAN LMIN, ID=3	TSCH1480
2298	516	ISK2 =ND(3)	TSCH1490
2299		GO TO 599	TSCH1500
2300	C	ASTR 100 SMALL, ID=4	TSCH1510
2301	515	ISK2 =ND(2)	TSCH1520
2302		GO TO 599	TSCH1530
2303	C		TSCH1540
2304	C	ID=2. L=LMAX	TSCH1550
2305	517	ISK1=ND(3)	TSCH1560
2306	C	TEST FOR CONDITION OF SEARCH EPS= 1 PER CENT 518=DELTA TSKO.	TSCH1570
2307	C	518=LMIN, 520=TWO PI0, 521=HMIN, 522=ASTRMIN	TSCH1580
2308	518	IF (TSS(49)*D(31)-TSS(42)) 519,599,599	TSCH1590
2309	519	IF (STLMN*D(31) - TSC(397)) 520,599,599	TSCH1600
2310	C	NO TEST ON T(RIB WEB)	TSCH1610
2311	520	IF (TSS(46)*D(31) - TSC(395)) 522,599,599	TSCH1620
2312	522	IF (TSC(391)*D(31) - TSC(392)) 526,599,599	TSCH1630
2313	C	OK, SEARCH SAVE TSKO,T1 DATA AND SETUP TO TEST SLOPE	TSCH1640
2314	526	DO 527 I=1,30	TSCH1650
2315		TSC(I+290)=TSC(I+382)	TSCH1660
2316	527	TSS(I+68) =TSC(I+382)	TSCH1670
2317		ISK1=ND(1)	TSCH1680
2318		TSS(50)=TSC(383)	TSCH1700
2319		TSC(411)=TSS(49)+D(34)*TSS(48)	TSCH1710
2320	C		TSCH1711
2321	C	SET ID FOR STBAR TRACE ISTB = 3	TSCH1712
2322	C		TSCH1713
2323		ISTB = ND(3)	TSCH1714
2324		CALL STBAR (TSC(411))	TSCH1720
2325		IF (ND(2) - IL2) 523,525,525	TSCH1730
2326	C	TSK2 NO, USE TSKO	TSCH1740
2327	523	DO 524 I=1,30	TSCH1750
2328	524	TSC(I+382) =TSS(I+ 68)	TSCH1760
2329		GO TO 599	TSCH1780
2330	C	TEST SLOPE OF SUM TBARS	TSCH1790
2331	525	IF (TSC(383)-TSS(50))530,523,523	TSCH1800
2332	C	TBAR2 LESS THAN TBARO, SEARCH TSKO TO TSKMAX	TSCH1810
2333	530	TSS(2)= TSS(50)	TSCH1820
2334		TSS(5)= TSS(49)	TSCH1830
2335		TSS(51)= TSS(48)/D(33)	TSCH1840
2336		TSS(52)= TSS(42)	TSCH1850
2337		IL3 =ND(1)	TSCH1860
2338		LT1 = ND(1)	TSCH1870
2339		LT2 = ND(18)	TSCH1880
2340		LT3 = ND(17)	TSCH1890
2341		TSS(6)= TSS(5)+ TSS(51)	TSCH1900
2342	C		TSCH1910

CARD NO	**** CONTENTS ****	
2343	C SET ID FOR STBAR TRACE ISTB = 4	TSCH1911
2344	C	TSCH1912
2345	ISTB = ND(4)	TSCH1913
2346	CALL STBAR (TSS(6))	TSCH1920
2347	IF (ND(2) - IL2) 531,532,532	TSCH1930
2348	C T3 TOO LARGE, TMAX=T3	TSCH1940
2349	531 TS6(52) = TSS(6)	TSCH1950
2350	TSS(6) = TSS(6) - D(35)*TSS(51)	TSCH1960
2351	C	TSCH1970
2352	C SET ID FOR STBAR TRACE ISTB = 5	TSCH1971
2353	C	TSCH1972
2354	ISTB = ND(5)	TSCH1973
2355	CALL STBAR (TSS(6))	TSCH1980
2356	IF (ND(2) - IL2) 533,549,549	TSCH1990
2357	C	TSCH1997
2358	C **END SEARCH ON TEST WITH D(32)=.06 VS PT(3-2)/DEL(T)**	TSCH1998
2359	C *DEL(T)=TSS(48)+(TSKMX - TSKMN)/D(33)*	TSCH1999
2360	533 IF (((TSS(6) - TSS(51))/TSS(48) - D(32)) 535,535,531	TSCH2000
2361	C	TSCH2010
2362	C RESET T2 DATA AS OPT N=3)	TSCH2020
2363	535 N= LT2	TSCH2030
2364	548 DO 538 I=1,30	TSCH2040
2365	IN=I+N+ND(10)	TSCH2050
2366	538 TSC(I+382)=TSC(IN)	TSCH2060
2367	GO TO 599	TSCH2080
2368	C T3 OK, SAVE	TSCH2090
2369	532 DO 537 I=1,30	TSCH2100
2370	537 TSC(I+320)= TSC(I+382)	TSCH2110
2371	TSS(3) = TSC(383)	TSCH2130
2372	IF (TSS(3)-TSS(2)) 538,534,534	TSCH2140
2373	C MOVE 2,3 TO 1,2	TSCH2150
2374	538 N=LT1	TSCH2160
2375	LT1=LT2	TSCH2170
2376	LT2=LT3	TSCH2180
2377	LT3 = N	TSCH2190
2378	DO 540 I=1,2	TSCH2200
2379	TSS(I)=TSS(I+1)	TSCH2210
2380	540 TSS(I+3)= TSS(I+4)	TSCH2220
2381	IL3=IL3+ND(1)	TSCH2240
2382	TSS(6)= TSS(5)+TSS(51)	TSCH2250
2383	C	TSCH2260
2384	C SET ID FOR STBAR TRACE ISTB = 6	TSCH2261
2385	C	TSCH2262
2386	ISTB = ND(6)	TSCH2263
2387	CALL STBAR (TSS(6))	TSCH2270
2388	IF (IL2 - ND(3)) 541,531,531	TSCH2280
2389	541 DO 539 I=1,30	TSCH2290
2390	IN=I+LT3+ND(10)	TSCH2300
2391	539 TSC(IN)=TSC(I+382)	TSCH2310
2392	TSS(3) = TSC(383)	TSCH2320
2393	C	TSCH2330
2394	C *** TEST DIFF OF T-BARS***	TSCH2330
2395	TSS(55) = TSS(2) - TSS(3)	TSCH2340
2396	IF (TSS(55)) 550,550,542	TSCH2341
2397	542 IF (D(84)/D(10) - TSS(55)) 5420,547,547	TSCH2345
2398	5420 IF (TSS(55) - D(84)) 5421,5421,5424	TSCH2346
2399	5421 TSS(55) = (TSS(2) - TSS(1))/TSS(55)	TSCH2350
2400	IF (TSS(55) - D(10)) 5422,550,550	TSCH2351
2401	5422 IF (D(2) - TSS(55)) 5424,547,547	TSCH2352
2402	5424 IF (IL3 - ND(10)) 538,5426,5426	TSCH2355
2403	5426 TS6(6) = TSS(52)	TSCH2356
2404	GO TO 534	TSCH2357
2405	C	TSCH2358
2406	C SAVE T3 DATA	TSCH2359
2407	549 DO 548 I=1,30	TSCH2370
2408	IN=LT3+I+ND(10)	TSCH2380
2409	548 TSC(IN)=TSC(I+382)	TSCH2390
2410	TSS(3)=TSC(383)	TSCH2410
2411	TS6(52)= (TSS(6) + TSS(52))/D(2)	TSCH2420
2412	C T3 IS OK, T1=T2	TSCH2430
2413	534 TSS(1)=TSS(2)	TSCH2440

CARD NO	****	COMMENTS	****
2N14		TSS(4)=TSS(5)	TSCHE450
2N15		N=LT1	TSCHE460
2N16		LT1=LT2	TSCHE470
2N17		LT2=N	TSCHE480
2N18		TSS(5) = (TSS(4) + TSS(6))/D(2)	TSCHE490
2N19	C		TSCHE500
2N20	C	SET ID FOR STBAR TRACE ISTB = 7	TSCHE501
2N21	C		TSCHE502
2N22		ISTB = ND(7)	TSCHE503
2N23		CALL STBAR (TSS(5))	TSCHE510
2N24		IF (IL2 - ND(3)) 943,945,945	TSCHE520
2N25	943	TSS(2)= TSC(283)	TSCHE530
2N26		DO 944 I=1,30	TSCHE540
2N27		IN=I+LT2+ND(10)	TSCHE550
2N28	944	TSC(IN)=TSC(I+382)	TSCHE560
2N29	C	TO INTERP. NO 1	TSCHE580
2N30		GO TO 950	TSCHE590
2N31	C	T2 IS NO TEST I WITH 3	TSCHE600
2N32	945	N = LT1	TSCHE610
2N33		IF (TSS(3)-TSS(1)) 947,947,946	TSCHE620
2N34	C	USE T3 DATA	TSCHE630
2N35	947	N = LT3	TSCHE640
2N36		GO TO 946	TSCHE650
2N37	C		TSCHE660
2N38	C	INTERPOLATE FOR FIRST MIN	TSCHE670
2N39	950	IK= ND(1)	TSCHE680
2N40	9500	CALL COMP (TSS(4),TSS(1))	TSCHE690
2N41		IF (IL - ND(2)) 951,570,560	TSCHE700
2N42	C	IL=1, LEFT, TEST T1	TSCHE710
2N43	951	IF (TSS(4)-TSS(49))952,952,953	TSCHE720
2N44	952	IF (TSS(1)-TSS(2)) 945,935,935	TSCHE730
2N45	C	MOVE 2 TO 3, 1 TO 2	TSCHE740
2N46	953	TSS(3)=TSS(2)	TSCHE750
2N47		TSS(2)=TSS(1)	TSCHE760
2N48		TSS(6)=TSS(5)	TSCHE770
2N49		TSS(5)=TSS(4)	TSCHE780
2N50		N=LT3	TSCHE790
2N51		LT3=LT2	TSCHE800
2N52		LT2=LT1	TSCHE810
2N53		LT1=N	TSCHE820
2N54		IF (TSS(4) - TSS(49) - D(8)) 952,952,9530	TSCHE825
2N55	9530	TSS(4) = TSS(5) - D(3))*(TSS(6) - TSS(5))	TSCHE830
2N56		IF (TSS(4) - TSS(49)) 954,954,955	TSCHE835
2N57	954	TSS(4)= TSS(49)	TSCHE840
2N58		TSS(1)= TSS(50)	TSCHE850
2N59		DO 956 I=1,30	TSCHE860
2N60		IN=I+LT1+ND(10)	TSCHE870
2N61	956	TSC(IN)=TSS(I+60)	TSCHE880
2N62		GO TO 950	TSCHE890
2N63	955	TSS(4) = (TSS(5) + TSS(49))/D(2)	TSCHE910
2N64	C		TSCHE920
2N65	C	SET ID FOR STBAR TRACE ISTB = 8	TSCHE921
2N66	C		TSCHE922
2N67		ISTB = ND(8)	TSCHE923
2N68		CALL STBAR (TSS(4))	TSCHE930
2N69		IF (IL2 - ND(3)) 957,954,954	TSCHE940
2N70	957	DO 958 I=1,30	TSCHE950
2N71		IN=I+LT1+ND(10)	TSCHE960
2N72	958	TSC(IN)=TSC(I+382)	TSCHE970
2N73		TSS(1) = TSC(383)	TSCHE980
2N74		GO TO 950	TSCHE990
2N75	C		TSCH3000
2N76	C	IL=3, RIGHT	TSCH3010
2N77	880	IF (TSS(6)-TSS(52)) 961,947,947	TSCH3020
2N78	C	SET 1 TO 2, 2 TO 3	TSCH3030
2N79	961	DO 962 I=1,2	TSCH3040
2N80		TSS(I) = TSS(I+1)	TSCH3050
2N81	962	TSS(I+3)= TSS(I+4)	TSCH3060
2N82		N=LT1	TSCH3080
2N83		LT1=LT2	TSCH3090
2N84		LT2=LT3	TSCH3100

CARD NO	**** CONTENTS ****	
2485	LT.>N	TSCH3110
2486	TSS(6)= TSS(5)+TSS(5)-TSS(4)	TSCH3120
2487	IF (TSS(6) - TS.(52)) 584,584,563	TSCH3130
2488	563 IF (TSS(52) - TSS(5) - D(84)) 560,560,5630	TSCH3135
2489	5630 TSS(6) = TSS(52)	TSCH3140
2490	C	TSCH3150
2491	C SET ID FOR STBAR TRACE ISTB = 8	TSCH3151
2492	C	TSCH3152
2493	ISTB = ND(8)	TSCH3153
2494	584 CALL STBAR (TSS(6))	TSCH3160
2495	IF (IL2 - ND(3)) 585,587,587	TSCH3170
2496	585 TSS(3)= TSC(383)	TSCH3180
2497	DO 586 I=1,30	TSCH3190
2498	IN=I+LT3+ND(10)	TSCH3200
2499	586 TSC(IN)=TSC(I+382)	TSCH3210
2500	GO TO 950	TSCH3230
2501	C	TSCH3230
2502	587 TSS(52) = TSS(6)	TSCH3240
2503	IF (TSS(1) - TSS(2) - D(84)/D(10)) 535,535,5870	TSCH3241
2504	5870 TSS(6) = TSS(6) - (TSS(6) - TSS(5))/D(4)	TSCH3242
2505	GO TO 563	TSCH3245
2506	C	TSCH3240
2507	588 IF (TSS(1)-TSS(2))545,535,535	TSCH3250
2508	C	TSCH3260
2509	C FIRST MINIMUM FOUND, ID = 2	TSCH3270
2510	C	TSCH3280
2511	570 TSS(53) = TUC(47)	TSCH3290
2512	C TEST TM1 WITH T1,T3	TSCH3300
2513	IF (TSS(4)-TSS(53)) 588,545,545	TSCH3310
2514	588 IF (TSS(53)-TSS(6))5701,547,547	TSCH3320
2515	C	TSCH3321
2516	C SET ID FOR STBAR TRACE ISTB = 10	TSCH3325
2517	C	TSCH3327
2518	5701 ISTB = ND(10)	TSCH3325
2519	CALL STBAR (TSS(53))	TSCH3326
2520	IF (ND(2) - IL2) 571,570,570	TSCH3340
2521	571 IF (TSS(2)-TSS(1))572,572,575	TSCH3350
2522	572 IF (TSS(3)-TSS(2))573,573,574	TSCH3360
2523	573 IF (TSS(3) -TSS(50))547,547,523	TSCH3370
2524	574 IF (TSS(2) -TSS(50))535,535,523	TSCH3380
2525	575 IF (TSS(1) -TSS(3))576,573,573	TSCH3390
2526	576 IF (TSS(1) -TSS(50))545,577,523	TSCH3400
2527	577 IF (TSS(4) -TSS(48))523,523,545	TSCH3410
2528	C	TSCH3420
2529	C TRM1 OK, SAVE DATA	TSCH3430
2530	578 DO 579 I=1,30	TSCH3440
2531	579 TSC(I+350) = TSC(I+382)	TSCH3450
2532	TSS(54)= TSC(383)	TSCH3470
2533	IF (TSS(54) - TSS(2))580,580,585	TSCH3480
2534	580 IF (TSS(53) - TSS(5))581,580,584	TSCH3490
2535	581 TSS(3)= TSS(2)	TSCH3500
2536	TSS(8)= TSS(5)	TSCH3510
2537	N=LT3	TSCH3520
2538	LT3=LT2	TSCH3530
2539	582 LT2=N	TSCH3540
2540	TSS(2) =TSS(54)	TSCH3550
2541	T.S(5) =TSS(53)	TSCH3560
2542	GO TO 587	TSCH3570
2543	C	TSCH3580
2544	C	TSCH3600
2545	C	TSCH3600
2546	584 TSS(1)= TSS(2)	TSCH3610
2547	TSS(4)= TSS(5)	TSCH3620
2548	N=LT1	TSCH3630
2549	LT1=LT2	TSCH3640
2550	GO TO 582	TSCH3650
2551	C	TSCH3660
2552	C TBAR M1 GREATER THAN TBAR2	TSCH3670
2553	C TEST TRM1 AND TM2	TSCH3680
2554	585 IF (TSS(53) - TSS(5)) 588,671,688	TSCH3690
2555	C MOVE TM1 DATA TO T1 LOC, T2 DATA TO TM1 LOC	TSCH3700

CARD NO **** CONTENTS ****

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  586  TSS(1)=TSS(54)                                              TSCH3710
       TSS(4)=TSS(53)                                              TSCH3720
       N=LT1                                                       TSCH3730
       GO TO 583                                                   TSCH3740
C      MOVE TM1 DATA TO T3 LOC, T2 DATA TO TM1 LOC                 TSCH3750
  589  TSS(3)=TSS(54)                                              TSCH3760
       TSS(6)=TSS(53)                                              TSCH3770
       N=LT3                                                       TSCH3780
  583  DO 5831 I=1,30                                              TSCH3790
       IN=N+I+ND(18)                                               TSCH3800
 5831  TSC(IN)=TSC(I+350)                                          TSCH3810
C      MOVE T2 DATA TO TM1                                         TSCH3830
       DO 5032 I=1,30                                              TSCH3840
       IN=LT2+I+ND(18)                                             TSCH3850
 5032  TSC(I+350)=TSC(IN)                                          TSCH3860
       TSS(53)=TSS(5)                                              TSCH3870
       TSS(54)=TSS(2)                                              TSCH3890
       GO TO 590                                                   TSCH3900
  587  DO 588 I=1,30                                               TSCH3910
       IN=I+N+ND(18)                                               TSCH3920
  588  TSC(IN)=TSC(I+350)                                          TSCH3930
C                                                                  TSCH3950
C                                                                  TSCH3960
C       INTERPOLATE FOR MIN 2                                      TSCH3970
  590  IK=ND(1)                                                    TSCH3980
       CALL CO3P (TSS(4),TSS(1))                                   TSCH3990
       N = LT1                                                     TSCH4000
       IF (IL - ND(2)) 5900,593,5901                               TSCH4005
 5900  N = LT3                                                     TSCH4007
 5901  DO 5902 I=1,30                                              TSCH4010
       IN = N + I + ND(18)                                         TSCH4011
       TSC(IN) = TSC(I+350)                                        TSCH4012
 5902  CONTINUE                                                    TSCH4015
       GO TO 571                                                   TSCH4018
C                                                                  TSCH4019
  591  DO 592  I=1,30                                              TSCH4020
  592  TSC(I+382)=TSC(I+350)                                       TSCH4030
C                                                                  TSCH4038
C              **TEST MIN WITH PT(1,2,3)**                         TSCH4039
  598  IF (TSC(383) - TSS(1)) 5980,5985,571                        TSCH4040
 5980  IF (TSC(383) - TSS(2)) 5981,5983.572                        TSCH4041
 5981  IF (TSC(383) - TSS(3)) 599,5982,573                         TSCH4045
 5982  IF (TSS(6) - TSC(411)) 598,589,547                          TSCH4050
 5983  IF (TSC(383) - TSS(3)) 5984,547,547                         TSCH4051
 5984  IF (TSS(5) - TSC(411)) 599,599,535                          TSCH4055
 5985  IF (TSC(383) - TSS(2)) 5986,5983,572                        TSCH4060
 5986  IF (TSC(383) - TSS(3)) 5987,5982,573                        TSCH4061
 5987  IF (TSS(4) - TSC(411)) 599,599,545                          TSCH4065
C                                                                  TSCH4069
C                                                                  TSCH4070
C      SET ID FOR STBAR TRACE                    ISTB = 11         TSCH4071
C                                                                  TSCH4072
  593  ISTB = ND(11)                                               TSCH4073
       CALL STBAR  ( TOC(47) )                                     TSCH4074
       TSS(95) = TOC(47)                                           TSCH4080
       IF (IL2 - ND(3)) 594,591,591                                TSCH4090
  594  IF (TSS(54) - TSC(383)) 591,595,598                         TSCH4100
  595  IF (TSS(53) - TSC(411)) 598,598,591                         TSCH4110
C                                                                  TSCH4120
C                                                                  TSCH4130
C       SETUP EXIT                                                 TSCH4140
  599  IF (ISK1 - ND(2)) 597,5990,5990                             10019020
  597  IF (TSC(397) - STLMX)  5990,596,596                         TSCH4160
  596  ISK1= ND(3)                                                 TSCH4170
C                                                                  CR019050
C             ***RESET SAVED DATA***                               CR019051
C        *** CHANGED NEXT 8 CARDS 11/13/72                         TSCH4171
C        *** RESET STR MIN GAGE AND B/T FOR MIN GAGE ***           TSCH4172
 5990  IF (CMSID)  705,705,5991                                    TSCH4173
  705  IF (IRGO) .EQ. 0 )    GO TO 5991
       IRGO1= ND(2)                                                TSCH4174
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CARD NO   ****                    CONTENTS                          ****
          IF (TMT(325)-STRMN) 706,706,5981                          TSCH4175
      706 STRMN = TMT(325)                                          TSCH4176
          TMT(327)= TMT(325)/TMT(326)                               TSCH4177
          GO TO 707                                                 TSCH4178
     5981 IMX =IMNO                                                 TSCH4179
          IBT = IBTO                                                CR019053
          TSEC(221) = TSEC(255)                                     CR019054
          TSEC(224) = TSEC(256)                                     CR019055
          TMT(305) = TSEC(257)                                      CR019056
          TMT(307) = TSEC(258)                                      CR019057
          TDC(184) = TSEC(258)                                      CR019058
C                                                                   CR019058
C                                                                   TSCH4180
C      EXIT                                                         TSCH4190
     9999 RETURN                                                    TSCH4200
          END                                                       TSCH4210
C*******-*********************.*************************************
C
C        *****SUBROUTINE STBAR*****
C   ***T-BAR EVALUATION FOR TOTAL COVER/SUPT STRUCTURES***
C
C*******************************************************************
C
          SUBROUTINE STBAR (STI)                                    STBA0010
C        SUM TBAR SUBR --                                           STBA0020
C                                                                   STBA0030
C       ***REVISION -08-28-72--REVISE SAVE DATA. SAVE B/T(H,F)***   08000016
C        *** REVISION --07-10-68-- ADD FDH, LWR COVER DESIGN FOR STR,PL,HPSTBA0040
C               *** REVISION -- 06-03-68 -- PLATES AND HC ***        STBA0050
C        REVISION -- 01-10-68 -- NEW FORMAT, NEW LINKAGES.          STBA0060
C                                                                   STBA0070
C       LINK TO  STRO, STRIL, STRIB                                 STBA0080
C                                                                   STBA0090
C        INPUT IL, 1= COMPLETE, 2 = DO TRIB                         STBA0100
C          OUTPUT IMO.  1=TSK OK,  2=L=LMAX,  3= L NG,  4= ASTR NG.  STBA0110
C                                                                   STBA0120
C                                                                   STBA0140
          COMMON T(2060),D(2060),CD(2000),ND(100)                   STBA0150
C                                                                   STBA0160
          DIMENSION                              DC(100),           STBA0170
         1TDC(200),TSC(420),TSS(100),TSEC(300),TMT(400)             STBA0180
C                                                                   STBA0190
          EQUIVALENCE (TDC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961)) STBA0200
          EQUIVALENCE (TMT(1),CD(1101)),(TSEC(1),CD(1501))          STBA0220
          EQUIVALENCE (DC(1),D(1401)),(STRFN,D(381)),(STLMN,D(375)), STBA0210
         1(STLMX,D(376)),(TRVT,D(397)),(DRVT,D(398)),(CNSID,D(461)), STBA0211
         7(BOTHC,TSEC(250)), (BOTFC,TSEC(251)),                     00000087
         2(DTC,D(462)),(DCRHO,D(463)),(DBRHO,D(464))                STBA0212
          EQUIVALENCE (IMN,ND(35)),(IL,ND(34)),(IMO,ND(33))         STBA0230
C                                                                   STBA0270
      100 TSC(411)=STI                                              STBA0280
          IF (IL - ND(2)) 105,99,105                                STBA0290
C                                                                   STBA0300
      105 IMO=ND(4)                                                 STBA0310
          CALL STRO                                                 STBA0320
          IF (IMN - ND(2)) 107,110,107                              STBA0330
C                                                                   STBA0340
C        DO  COLUMN LENGTH                                          STBA0350
      107 CALL STRIL                                                STBA0360
C        SAVE Y(BAR), TEST LENGTH (L)                               STBA0370
          TSC(408)= TSC(413)                                        STBA0380
C                                                                   STBA0390
C                 *** TEST FOR PLATES/HC                            STBA0400
          IF (CNSID - D(1)) 1070,99,99                              STBA0410
     1070 IMO = ND(3)                                               STBA0420
          TSC(416) =  TSC(387)/STLMN                                STBA0430
          TSC(405) = TSC(416)                                       STBA0440
          IF (STLMN - TSC(387)) 108,108,110                         STBA0450
      108 IMO = ND(1)                                               STBA0460
C                                                                   STBA0470
          IF (STLMX - TSC(387)) 100,100,131                         STBA0480
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CARD NO  ****                          CONTENTS                          ****
2698      100  TSC(387) = STLMK                                          STBA0490
2699           IMD = MD(2)                                               STBA0500
2700      C     SETUP  RIB DATA                                          STBA0510
2701           GO TO 131                                                 STBA0520
2702      C           *** TEST FOR FDH ***                               STBA0530
2703       90  IF (D(3) - CMSID) 130,130,131                             STBA0540
2704      C           *** FDH *** -- TBAR(RIB) = TBAR(CORE)              STBA0550
2705      130  TSC(388) = TSEC(227)*TDC(73)                              STBA0560
2706           TSC(390) = DC(3)                                          STBA0570
2707           TSC(408) = TSC(386)                                       STBA0580
2708           TSC(403) = TSC(381)                                       STBA0590
2709           TSC(407) = D(1)                                           STBA0600
2710           TSC(387) = DC(3)                                          STBA0610
2711           TSC(388) = DC(3)                                          STBA0620
2712           TSC(389) = DC(3)                                          STBA0630
2713           TSC(383) = TSC(385) + TSC(386) + TSC(387)                 STBA0640
2714           GO TO 110                                                 STBA0650
2715      C                                                              STBA0660
2716      C      STR, PL, HP TEST FOR UPR/LWR COVER                      STBA0670
2717      131  TSC(386) = TDC(89)                                        STBA0680
2718           TSC(389) = TDC(92)                                        STBA0690
2719           TSC(390) = TDC(93)                                        STBA0700
2720      C                                                              STBA0710
2721      133  TSC(384) = DC(3)                                          STBA0720
2722      C                                                              STBA0730
2723      132  CALL STRIB                                                STBA0740
2724      C                                                              STBA0750
2725      C                                                              STBA0760
2726      C       ****ADJUST T(BAR RIB) ****                             STBA0770
2727           TSC(389) = TSC(389)*TSEC(233)                             STBA0780
2728           TSC(390) = TSC(390)*TSEC(233)                             STBA0790
2729           TSC(386) = TSC(386)*TSEC(233)                             STBA0800
2730      C                                                              STBA0810
2731      C                                                              STBA0820
2732      C            ***SAVE F(L) IN ER(RIB), B/T(H(REQD)) IN  R(CORR),  09000160
2733      C              B/T(F(REQD)) IN FC(RIB)                         09000180
2734           TSC(404) = TSC(415)                                       STBA0840
2735           TSC(407) = BOTHC                                          09000171
2736           TSC(403) = BOTFC                                          09000172
2737      C                                                              09000178
2738      C                                                              STBA0850
2739      C       SUM T(BAR)                                             STBA0860
2740           TSC(384) = DC(3)                                          STBA0870
2741      C                                                              09000189
2742      C     SETUP MISC SK AND STR ATT.                               STBA0880
2743           IF (STRFW - D(1)) 98,98,101                               STBA0890
2744       98  TSC(420) = D(27)                                          STBA0900
2745           IF (TSC(394) - TSC(420)) 97,97,96                         STBA0910
2746       97  TSC(420) = TSC(394)                                       STBA0920
2747       96  TSC(387) = TSC(420)*TSC(420)/TSC(2)*D(28)                 STBA0930
2748           TSC(388) = DC(3)                                          STBA0940
2749           GO TO 104                                                 STBA0950
2750      C         T ATT -- 2 STR. --                                   STBA0960
2751      101  TSC(388) = TSC(411) + D(23)*D(23)*D(30)                   STBA0970
2752           TSC(388) = TSC(388)*DRVT/D(29)*DRVT/TSC(2)                STBA0980
2753      C              MISC. SK.                                       STBA0990
2754           TSC(387) = DC(3)                                          STBA1000
2755           TSC(420) = D(24) - D(1)                                   STBA1010
2756           IF (TSC(420)) 1030,1030,1031                              STBA1020
2757      1030 TSC(420) = D(1)/D(12)                                     STBA1030
2758      1031 TSC(420) = TSC(420)*TSC(411)                              STBA1040
2759           IF (TRVT) 103,103,102                                     STBA1050
2760       103  TSC(387) = (TSC(386)*D(30)+TSC(389))*TSC(420)/TSC(2)     STBA1060
2761           GO TO 104                                                 STBA1070
2762      C            INPUT T                                          STBA1080
2763       102  TSC(420) = TRVT - TSC(411)                               STBA1090
2764           IF (TSC(420)) 104,104,103                                 STBA1100
2765       104  TSC(383) = TSC(385) + TSC(384) + TSC(386) + TSC(387) + TSC(388) + STBA1110
2766          1TSC(389) + TSC(390)                                       STBA1120
2767      C                                                              STBA1130
2768      C                                                              STBA1140
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CARD NO  ****                          CONTENTS                          ****
 2760      C            TEST CONST. FOR PLATES, HC, STR.                    STBAI150
 2770           IF (D(1) - CNSID) 120,110,110                               STBAI160
 2771      C       *** HP. CORE=THSK(STRI+TSC(387), BOND=THSK(RIB)+TSC(390)  STBAI170
 2772       120  TSC(387) = TSEC(227) + TSC(387)                            STBAI180
 2773           TSC(390) = TSEC(220) + TSC(390)                             STBAI190
 2774           TSC(383) = TSC(383) + TSEC(220) + TSEC(227)                 STBAI200
 2775      C                                                                STBAI210
 2776      C                                                                STBAI220
 2777      C     EXIT                                                       STBAI230
 2778       110  RETURN                                                     STBAI240
 2779           END                                                         STBAI250
 2780      C*************************************  ************************************
 2781      C
 2782      C       *****SUBROUTINE STRG*****
 2783      C   ***OPTIMUM STRINGER MATL DIST - GEOMETRY EVALUATION***
 2784      C
 2785      C*************************************************************************
 2786      C
 2787           SUBROUTINE STRG                                             STRG0010
 2788      C      STRINGER GEOMETRY SUBROUTINE                             STRG0020
 2789      C                                                               STRG0030
 2790      C    REVISION- 11-30-72- ADD SOLUTION EQUATION ID NO-STATEMENT NO.*** STRG0039
 2791      C    ***REVISION--05-14-70--ADD DETAIL SECTION SEARCH PRINT. ID=D(157)***STRG0040
 2792      C    ***REVISION--11-13-69--CORRECT K(STRI LOGIC. SU=D(455),P2=D(456)***STRG0050
 2793      C    ***REVISION--04-05-69--REVISE T(STRI MIN LOGIC T(15K) ***    STRG0060
 2794      C     *** REVISION -- 07-10-68 -- ADD FDH ***                     STRG0070
 2795      C              REVISION--05-17-68-- TEMP FIX FOR PLATES (METHOD A) STRG0080
 2796      C       ID=D(461)=CNSID.  NO PAD AT SPAR LINE, CONSTANT CAP AREA  STRG0090
 2797      C    - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 2798      C
 2799      C     ***ISTRG NO  TYPE  REGION  T-STR   H-STR   F-UPR   F-LWR    STRG0095
 2800      C       (1)  98   Z1,Z2    1,3     OPT     OPT     OPT     OPT    STRG0096
 2801      C       (2)  96   Z1,Z2    1,3     OPT     OPT     MAX     MAX    STRG0097
 2802      C       (3) 129   Z1,Z2    1,3     OPT     MAX     OPT     OPT    STRG0098
 2803      C       (4) 112   Z1,Z2    1,3     OPT     OPT     MIN     OPT    STRG0099
 2804      C       (5) 123     Z2    1,3     OPT     MAX     MIN     OPT    STRG0100
 2805      C            85     Z1    1,3   FMAT/T    T+H/T    0      FMAX   STRG0101
 2806      C           110     Z1    1,3   HMAX/T    HMAX     0      T+F/T  STRG0102
 2807      C           122   Z1,Z2   1,3   FMAT/T    HMAX    FMIN    FMIN   STRG0103
 2808      C    /T     125     Z2    1,3    FMAT      T+H/T   FMAX    FMAX   STRG0104
 2809      C    /T     127     Z2    1,3    HMAX      HMAX    -FL     T+F/T  STRG0105
 2810      C           141   Z1,Z2   1,3   FMAT/T    T+H/T    FMIN    FMIN   STRG0106
 2811      C           102     Z1    2,3     TMG      MIN     0       L-H    STRG0107
 2812      C           104   Z1,Z2   2,3     TMG      MIN     -FL     -FU    STRG0108
 2813      C           105   Z1,Z2   2,3     TMG      MIN     MIN    L-H-FU  STRG0109
 2814      C           106   Z1,Z2   2,3     TMG    L-FU-FL   MAX     MAX    STRG0110
 2815      C            73     ALL     ALL  **STR AREA TOO SMALL**            STRG0111
 2816      C            78     ALL     ALL     TMG      MIN     MIN     MIN   STRG0112
 2817      C           100   Z1,Z2   1,2,3   A/L,MAX    MAX     MAX     MAX   STRG0113
 2818      C           107   Z1,Z2   1,2,3    AMIN2     AMIN2   AMIN2   AMIN2 STRG0114
 2819      C            83       1     1,3     OPT      OPT      0       0     STRG0115
 2820      C            85       1     1,2,3   A/H      MAX      0       0     STRG0116
 2821      C            87       1     1,2,3   TMG      A/T      0       0     STRG0117
 2822      C                                                                STRG0118
 2823      C    - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 2824      C
 2825      C     REVISION -- 01-10-66 -- NEW FORMAT, NEW LINKAGE             STRG0120
 2826      C                                                                STRG0130
 2827      C     T SKIN = VARIABLE, FC=CONSTANT                             STRG0140
 2828      C     IM=1 OK                                                    STRG0150
 2829      C     IM=2 NG                                                    STRG0160
 2830      C                                                                STRG0170
 2831      C                                                                STRG0180
 2832           COMMON T(2060),D(2060),CD(20(8),ND(100)                     STRG0200
 2833           COMMON /IPRINT/ IP(100)
 2834      C                                                                STRG0210
 2835           DIMENSION                          BC(100),                 STRG0220
 2836          1TDC(200),TSC(420),TSS(100),TWT(400),TSEC(300),              STRG0230
 2837          2DBOP(4)                                                     STRG0240
 2838      C                                                                STRG0250
 2839           EQUIVALENCE (TDC(1),T(1391)),(TSC(1),T(1591)),(TSS(1),T(1981))  STRG0260
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CARD NO  ****                          CONTENTS                          ****
  2040        EQUIVALENCE (DC(1),D(1401)),(STRFN,D(136)),(STRMN,D(137)),    STRG0270
  2041       1(HSTMN,D(377)),(HSTMX,D(378)),(STFMX,D(379)),(STFMN,D(380)),   STRG0271
  2042       2(STRRO,D(456)),              (STRSK,D(455)),(CNSID,D(463)),    STRG0272
  2043       3(DBKP(1),D(574))                                               STRG0273
  2044        EQUIVALENCE (TMT(1),CD(110)),(TSCC(1),CD(150))                 STRG0280
  2045        EQUIVALENCE (IM,ND(35)),(IBT,ND(72)),(IMX,ND(71)),(IRG,ND(70)), STRG0290
  2046       1(IK,ND(39))                                                    STRG0291
  2047       2,   (ISTRG,ND(88))                                             STRG0292
  2048  C                                                                    STRG0330
  2049  C            ***PRINT TISK), ASTRMIN DATA. IK=2. BLOCK 2 **          STRG0340
  2050     50 IF(IP(33))51,51,60
  2051   51  IK = ND(2)                                                      STRG0360
  2052       CALL PRTBK                                                      STRG0370
  2053  C                                                                    STRG0380
  2054  C                                                                    STRG0390
  2055  C       ****SAVE BASIC STR DATA, STR ONLY. IRGO=1 SETUP, 2=RESET***  STRG0400
  2056   60  IF (CNSID) 70,61,70                                            STRG0410
  2057  C       ***SETUP EXIT ID 1=OK, 2=NO***                               STRG0420
  2058   70  IM=ND(1)                                                       STRG0430
  2059       TSC(413)=DC(3)                                                  STRG0440
  2060       TSC(414) = DC(3)                                                STRG0450
  2061  C                                                                    STRG0460
  2062  C           ***TEST FOR BLOCK 3 PRINT. IK=3 ***                      STRG0470
  2063       IF(IP(33))52,52,71
  2064   52  IK = ND(3)                                                      STRG0490
  2065       CALL PRTBK                                                      STRG0500
  2066  C                                                                    STRG0510
  2067  C                                                                    STRG0520
  2068  C       ASK, ASTR                                                    STRG0530
  2069   71  TSC(412)= TSC(2)*TSC(411)                                       STRG0540
  2070       TSC(382)= TSC(382)-TSC(412)                                     STRG0550
  2071       TSC(387) =DC(3)                                                 STRG0560
  2072  C                                                                    STRG0570
  2073  C        *** TEST FOR PLATES--TEMP ***                               STRG0580
  2074       IF (D(1) - CNSID) 720,720,729                                   STRG0590
  2075  C       *** TEST FOR FDH -- TBAR(STR)=TBAR(BOND)                     STRG0600
  2076   720 IF (CNSID - D(2)) 722,722,723                                   STRG0610
  2077   722 TSC(393) = TSC(382)/TSC(2)                                      STRG0620
  2078       IF (TSC(382)) 721,721,76                                        STRG0630
  2079   721 TSC(382) = TSS(43)*TSEC(232)                                    STRG0640
  2080       TSC(383) = TSC(382)/TSC(2)                                      STRG0650
  2081       GO TO 76                                                        STRG0660
  2082  C                                                                    STRG0670
  2083   729 IF (TSC(382)) 72,72,74                                          STRG0680
  2084  C       SET ASTR=0, IM=2, EXIT                                       STRG0690
  2085   72  TSC(388)= DC(3)                                                STRG0700
  2086   73  IM=ND(2)                                                       STRG0710
  2087       ISTRG = 73                                                      STRG0711
  2088       GO TO 90                                                        STRG0720
  2089  C                                                                    STRG0730
  2090  C       SETUP DATA -- R, T-BAR(STR)                                  STRG0740
  2091   74  TSC(414)= TSC(382)/TSC(381)                                     STRG0750
  2092       TSC(383)= TSC(382)/TSC(2)                                       STRG0760
  2093  C      TEST FOR MIN                                                  STRG0770
  2094       IF (TSC(381)- TSC(382)*1.001)  75,76,73                         STRG0780
  2095  C                                                                    STRG0790
  2096  C                                                                    STRG0800
  2097   75  IF (TSC(382) - TSC(381)*1.001) 76,76,80                         STRG0810
  2098  C       USE ASTR(MIN) PROPERTIES                                     STRG0820
  2099   76  DO 77 I=1,4                                                    STRG0830
  2100       TSC(I+383)= TSS(I+43)                                           STRG0840
  2101   77  CONTINUE                                                       STRG0850
  2102       ISTRG = 76                                                      STRG0851
  2103       GO TO 90                                                        STRG0860
  2104  C                                                                    STRG0870
  2105  C            *** FDH ***                                             STRG0880
  2106   723 TSC(381) = TSEC(280)/D(2)                                       STRG0890
  2107       TSC(382) = TSC(381)                                             STRG0900
  2108       TSC(383) = TSC(381)                                             STRG0910
  2109       TSC(384) = TSC(381)                                             STRG0920
  2110       TSC(385) = TSC(385) + TSC(382)                                  STRG0930
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CARD NO	****	CONTENTS	****
2911		GO TO 99	STR00940
2912	C		STR00950
2913	C		STR00960
2914	C	COMPUTE STR GEOMETRY	STR00970
2915	80	TSC(394)= STRMN	STR00980
2916	800	TSC(388) =DC(3)	STR00990
2917		TWT(301) = TSC(392)/STRMN	STR01000
2918		IF (STRFN - D(1... 81,90,90	STR01010
2919	C	'-STR TEST REGION	STR01020
2920	81	IF (ND(2)-IRG) 82,84,83	STR01030
2921	C	REGION 3 -- COMPUTE H AT THIN, (B/T)	STR01040
2922	82	TSC(395) = TSC(394)*TSC(410)	STR01050
2923		IF (TSC(394)*TSC(395)- TSC(392)) 83,87,87	STR01060
2924	C	REGION 1,3 =F(B/T)	STR01070
2925	83	TSC(395) =SQRT (TSC(392)*TSC(410))	STR01080
2926		ISTRG = 83	STR01081
2927		IF (HSTMX - TSC(395)) 85,85,86	STR01090
2928	C	REGION 2 TEST AMAX(10)	STR01160
2929	84	IF (TWT(304)-TSC(392)) 85,85,87	STR01110
2930	C	H=HMAX	STR01120
2931	85	TSC(395) = HSTMX	STR01130
2932		ISTRG = 85	STR01131
2933	C	T= A/H	STR01140
2934	86	TSC(394)= TSC(392)/TSC(395)	STR01150
2935		GO TO 99	STR01160
2936	C	T=TMO, H=A/T	STR01170
2937	87	TSC(395) = TSC(392)/TSC(394)	STR01180
2938		ISTRG = 87	STR01181
2939		GO TO 99	STR01190
2940	C		STR01200
2941	C	Z(1,2) TYPE TEST REGION	STR01210
2942	90	IF (ND(2)-IRG) 91,100,92	STR01220
2943	C		STR01230
2944	C	REGION 3 TEST WITH AMIN(2)	STR01240
2945	91	IF (TWT(313)-TSC(392)) 92,107,130	STR01250
2946	C		STR01260
2947	C	REGION 1,3 --T NOT MO. Z(1),Z(2)	STR01270
2948	C	TEST WITH MAX T(B/T)	STR01280
2949	92	IF (TSC(392)-TWT(317)) 93,100,100	STR01290
2950	C		STR01300
2951	C	A(I) LESS THAN AMAX	STR01310
2952	C	TEST FOR TYPE	STR01320
2953	93	IF (STRFN - D(1))94,94,120	STR01330
2954	C		STR01340
2955	C	Z(1) TYPE - TEST FOR MAX POINT.	STR01350
2956	94	IF (ND(1) - IMX) 95,110,110	STR01360
2957	C		STR01370
2958	C	IMX=2 MAX(B/T)=F(HMAX)	STR01380
2959	C	COMPUTE AREA AT F=FMAX	STR01390
2960	95	TSC(394) = STFMX/TWT(312)	STR01400
2961		TSC(395) = TSC(410)*TSC(39...	STR01410
2962		TSC(387) = STFMX	STR01420
2963		TWT(319) = TSC(394)*(TSC(395)+TSC(397)	STR01430
2964		ISTRG = 95	STR01431
2965		IF (TWT(319)-TSC(392)) 98,99,98	STR01440
2966	C		STR01450
2967	C	EQUATION NO 2. T=F(A(I),(B/T)H,(FU,FL(MAX))	STR01460
2968	C	F=FMAX,H=OPT, T=OPT SETUP GENERAL EQU FOR Z(1),Z(2)	STR01470
2969	98	TWT(320)= STRFN*STFMX	STR01480
2970		ISTRG = 98	STR01481
2971		TSC(394) = (SQRT (TWT(320)*TWT(320) + TSC(392)*TSC(410)/D(50))-TWT	STR01490
2972		(320))/TSC(410)*D(19)	STR01500
2973		TSC(387)= STFMX	STR01510
2974	97	TSC(385)= TSC(410)*TSC(394)	STR01520
2975	970	TSC(388) = TSC(387)*TSEC(223)	STR01530
2976		GO TO 99	STR01540
2977	C		STR01550
2978	C	EQUATION NO 1. OPT T,FU,FL,H	STR01560
2979	C	H,F(L),F(U) = OPT FU=FL	STR01570
2980	99	TSC(394)= SQRT (TSC(392)/(TSC(410)* STRFN*TWT(312)))	STR01580
2981		TSC(387)= TWT(312)*TSC(394)	STR01590

CARD NO	**** CONTENTS ****	
2982	ISTRG = 98	STRG1591
2983	GO TO 97	STRG1600
2984	C	STRG1610
2985	C MMX=1 MAX(B/T) =F(FMAX)	STRG1620
2986	C COMPUTE AREA AT M=MMAX	STRG1630
2987	C M=MMAX Z(1) ONLY	STRG1640
2990	110 TSC(394)= HSTMX/TSC(410)	STRG1650
2989	TSC(395)= HSTMX	STRG1660
2990	TSC(397)= TWT(312)*TSC(394)	STRG1670
2991	TWT(319) = TSC(394)*(TSC(395)+TSC(397))	STRG1680
2992	ISTRG = 110	STRG1681
2993	IF (TWT(319)-TSC(392)) 112,99,98	STRG1690
2994	C	STRG1700
2995	C EQUATION NO 4. T=F(A(I),MMAX,(B/T)F)	STRG1710
2996	C M=MMAX, T=OPT, FU=FL=OPT -- GENERAL EQU FOR Z(1), Z(2)	STRG1720
2997	C	STRG1730
2998	112 TSC(394)= (SORT (TSC(395)*TSC(395)+ TSC(392)*STRFN/D(50)*TWT(312))STRG1740
2999	1 - TSC(395))/TWT(312)*D(19)/STRFN	STRG1750
3000	TSC(397)= TWT(312)*TSC(394)	STRG1760
3001	ISTRG = 112	STRG1761
3002	GO TO 970	STRG1770
3003	C	STRG1780
3004	C Z(2) TYPE - TEST FOR EQU IN REGION 1,3	STRG1790
3005	120 IF (HSTMX-HSTMN) 121,121,124	STRG1800
3006	C MMX=MMN TEST AT FU=FL	STRG1810
3007	121 TSC(394)= STFMN/TWT(312)	STRG1820
3008	TSC(395)= HSTMX	STRG1830
3009	122 TSC(396)= STFMN	STRG1840
3010	TSC(397)= STFMN	STRG1850
3011	ISTRG = 122	STRG1851
3012	IF (TSC(392)-TSC(394)*(TSC(395)+ TSC(396)+ TSC(397))) 123,99,112	STRG1860
3013	C	STRG1870
3014	C EQUATION NO 5. T=F(A(I),MMAX,FUMIN,(B/T)F)	STRG1880
3015	C FU=FMIN M=MMAX FL=OPT	STRG1890
3016	123 TWT(320)= TSC(395)+TSC(396)	STRG1900
3017	TSC(394)= (SORT (TWT(320)*TWT(320)+TSC(392)*TWT(312)/D(50)) - TWT(STRG1910
3018	1320))/TWT(312)*D(19)	STRG1920
3019	ISTRG = 123	STRG1921
3020	GO TO 1290	STRG1930
3021	C	STRG1940
3022	C	STRG1950
3023	C TEST FOR MAX(B/T)	STRG1960
3024	124 IF (ND(1)-MX) 125,127,127	STRG1970
3025	C ID=2 M=MMAX	STRG1980
3026	125)SC(396)=STFMX	STRG1990
3027	TSC(397)=STFMX	STRG2000
3028	TSC(394)= TSC(396)/TWT(312)	STRG2010
3029	TSC(395)= TSC(410)*TSC(394)	STRG2020
3030	ISTRG = 125	STRG2021
3031	IF (TSC(392)- TSC(394)*(TSC(395)+TSC(396)+TSC(397))) 141,99,98	STRG2030
3032	C	STRG2040
3033	C	STRG2050
3034	C	STRG2060
3035	C	STRG2070
3036	C	STRG2080
3037	C F=FMAX ID=1 TEST B/T(FUMIN), B/T(MMAX)---DETERMINE LOC	STRG2090
3038	127 TSC(395)=HSTMX	STRG2100
3039	TSC(394)= TSC(395)/TSC(410)	STRG2110
3040	TSC(396)= TWT(312)*TSC(394)	STRG2120
3041	TSC(397)=TSC(396)	STRG2130
3042	ISTRG = 127	STRG2131
3043	IF (TSC(396)-STFMN) 128,122,140	STRG2140
3044	C FU=FMIN, EQU 3 OR 4-5	STRG2150
3045	128 TSC(396)= STFMN	STRG2160
3046	IF (TSC(392) - TSC(394)*(TSC(395) +TSC(396)+TSC(397))) 129,129,121STRG2170
3047	C	STRG2180
3048	C EQUATION NO 3. T=F(A(I),FUMIN,(B/T)M,(B/T)F)	STRG2190
3049	C FU=FMIN, FL,M=OPT	STRG2200
3050	129 TWT(320) = TSC(410)*TWT(312)	STRG2210
3051	ISTRG = 129	STRG2211
3052	TSC(394) = (SORT (TSC(396)*TSC(396) + TWT(320)/D(50)*TSC(392)) - TSTRG2220

CARD NO	**** CONTENTS ****	
3053	TSC(396))/TWT(320)*D(19)	STRG2230
3054	TSC(395)=TSC(394)*TSC(410)	STRG2240
3055	1290 TSC(397)= TWT(312)*TSC(394)	STRG2250
3056	GO TO 99	STRG2260
3057	C	STRG2270
3058	C FU-FL=OPT AT M=MMAX	STRG2280
3059	140 IF (TSC(392)-TSC(394)*(TSC(395)+TSC(396)+T[illegible]397))) 141,99,112	STRG2290
3060	C TEST FOR OPT FU,FL,M OR FU=FMIN	STRG2300
3061	141 TSC(396)= STFMN	STRG2310
3062	TSC(397)= STFMN	STRG2320
3063	TSC(394)= TSC(396)/TWT(312)	STRG2330
3064	TSC(395)= TSC(394)*TSC(410)	STRG2340
3065	ISTRG = 141	STRG2341
3066	IF (TSC(394)*(TSC(395)+TSC(396)+ TSC(397)) - TSC(392)) 99,99,129	STRG2350
3067	C	STRG2360
3068	C	STRG2370
3069	C Z(1), Z(2)	STRG2380
3070	C REGION 2 T=TMG TEST WITH AMAXG	STRG2390
3071	100 TSC(394)= TSC(392)/TWT(308)	STRG2400
3072	TSC(395)=HSTMX	STRG2410
3073	TSC(397)=STFMX	STRG2420
3074	TSC(396)= TSC(397)*TSEC(223)	STRG2430
3075	ISTRG = 100	STRG2431
3076	IF (TSC(392) - TWT(304)) 101,99,99	STRG2440
3077	C L= A/TMG	STRG2450
3078	101 TSC(394)= STRMN	STRG2460
3079	IF (TWT(301)-TWT(303)) 102,105,105	STRG2470
3080	C M=MMIN	STRG2480
3081	102 TSC(395)=HSTMN	STRG2490
3082	TSC(397)= TWT(301)-TSC(395)	STRG2500
3083	ISTRG = 102	STRG2501
3084	IF (D(1)-STFMN) 103,99,99	STRG2510
3085	C Z(2) TYPE	STRG2520
3086	103 TSC(396) = STFMN	STRG2530
3087	ISTRG = 103	STRG2531
3088	IF (TWT(302)-TSC(397)) 104,104,105	STRG2540
3089	104 TSC(396) = TSC(397)*D(19)	STRG2550
3090	ISTRG = 104	STRG2551
3091	105 TSC(397) = TSC(397)-TSC(396)	STRG2560
3092	GO TO 99	STRG2570
3093	C M= L-FU - FL	STRG2580
3094	106 TSC(395)= TWT(301)-TSC(396)-TSC(397)	STRG2590
3095	ISTRG = 106	STRG2591
3096	GO TO 99	STRG2600
3097	C	STRG2610
3098	C REGION 3. A(1)=AMIN2	STRG2620
3099	107 TSC(395) = TWT(314)	STRG2630
3100	TSC(396) = TWT(315)	STRG2640
3101	TSC(397) = TWT(316)	STRG2650
3102	ISTRG = 107	STRG2651
3103	GO TO 99	STRG2660
3104	C	STRG2670
3105	C REGION 3. A(1) LESS THAN AMIN2 T=TMG. TEST FOR Z(1),Z(2)	STRG2680
3106	130 TSC(395)=HSTMN	STRG2690
3107	TSC(397)= TWT(312)*TSC(394)	STRG2700
3108	IF (STRMN - D(1)) 131,131,134	STRG2710
3109	C Z(1)	STRG2720
3110	131 IF (STFMX - TSC(397)) 132,133,133	STRG2730
3111	132 TSC(397)=STFMX	STRG2740
3112	133 IF (TSC(395)+TSC(396) + TSC(397)-TWT(301)) 106,102,102	STRG2750
3113	C	STRG2760
3114	C Z(2)	STRG2770
3115	134 IF (STFMX - TSC(397)) 135,135,137	STRG2780
3116	135 TSC(397)= STFMX	STRG2790
3117	136 TSC(396)= TSEC(223)*TSC(397)	STRG2800
3118	GO TO 133	STRG2810
3119	137 IF (TSC(397) - STFMN) 138,136,136	STRG2820
3120	138 TSC(396)= STFMN	STRG2830
3121	GO TO 133	STRG2840
3122	C	STRG2850
3123	C	STRG2860

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CARD NO  ****                          CONTENTS                          ****
3124      C       ****DATA SETUP FOR STR SEARCH.  T(STR)=F(K*TSKIN)****          STRG2870
3125      C       *** INPUT SETUP -- TEST FOR TSTR = CONSTANT ***                 STRG2880
3126       61   IF (STRSK) 70,70,610                                             STRG2890
3127       610  IRGO = ND(1)                                                     STRG2900
3128            TWT(322) = STRMN                                                 STRG2910
3129            TWT(324) = TSC(409)*TSC(411) / TSC(2)                            STRG2920
3130            TWT(321) = STRSK*TSC(411)                                        STRG2930
3131            IF (D(1) - TWT(324)) 611,613,613                                 STRG2940
3132       611  TWT(324) = STRSK/SQRT (TWT(324))                                STRG2950
3133            TWT(321) = TWT(324)*TSC(411)                                     STRG2960
3134            IF (TWT(324) - STRRO) 612,613,613                                STRG2970
3135       612  TWT(321) = STRRO*TSC(411)                                       STRG2980
3136       613  TWT(323) = D(1)                                                  STRG2990
3137            IF (TWT(321) - STRMN)  614,614,62                                STRG3000
3138       614  TWT(321) = STRMN                                                 STRG3010
3139            GO TO 70                                                         STRG3020
3140      C                                                                      STRG3030
3141      C                                                                      STRG3040
3142      C        ****SCALE BASIC STR CONTROL DATA ****                         STRG3050
3143       62   STRMN = TWT(321)                                                 STRG3060
3144            TWT(323) = TWT(321)/TWT(322)                                     STRG3070
3145       63   TWT(304) = TWT(304)*TWT(323)                                     STRG3080
3146            TWT(307) = TWT(307)/TWT(323)                                     STRG3090
3147            DO 639 I=1,2                                                     STRG3100
3148            TSS(I+42) = TSS(I+42)*TWT(323)                                   STRG3110
3149            TWT(I+307) = TWT(I+307)/TWT(323)                                 STRG3120
3150            TWT(I+309) = TWT(I+309)/TWT(323)                                 STRG3130
3151       639  CONTINUE                                                         STRG3140
3152      C                                                                      STRG3150
3153      C       *** SETUP MIN STR=F(FCCR) DATA ***                             STRG3160
3154            CALL STRGO                                                       STRG3170
3155      C            **** TEST FOR SETUP OR EXIT ON IRGO ****                  STRG3180
3156            IF (IRGO - ND(1)) 70,70,999                                      STRG3190
3157      C                                                                      STRG3200
3158      C       **** EXIT PHASE.  TEST FOR RESET OR STR DATA. IRGO=2.***       STRG3210
3159       99   IF (CNSID) 64,64,999                                             STRG3220
3160       64   IRGO = ND(2)                                                     STRG3230
3161            IF (TWT(322) - STRMN) 640,640,999                                STRG3240
3162       640  STRMN = TWT(322)                                                 STRG3250
3163            TWT(323) = TWT(322)/TWT(321)                                     STRG3260
3164            GO TO 63                                                         STRG3270
3165      C                                                                      STRG3280
3166      C                                                                      STRG3290
3167      C            ****TEST FOR BLOCK 4 PRINT.  IK=4 ****                    STRG3300
3168        999 IF(IP(33))53,53,9999
3169       53   IK = ND(4)                                                       STRG3320
3170            CALL PRTBK                                                       STRG3330
3171      C                                                                      STRG3340
3172      C                                                                      STRG3350
3173       9999 RETURN                                                          STRG3360
3174            END                                                              STRG3370
3175      C--------------------------------------------------------- ----------------
3176      C
3177      C       *****SUBROUTINE STRGO*****
3178      C   ***STRINGER GEOMETRY - BOUNDARY INITIALIZATION***
3179      C
3180      C------------------------------------------    ------------------------
3181      C
3182            SUBROUTINE STRGO                                                 STR00010
3183      C     *** STR GEOM. DATA FOR GIVEN FCCR.  BASIC TSK SEARCH. ***        STR00020
3184      C                                                                      STR00030
3185      C     ** NEW SUBR. 04-65-69 -- PART OF TSCH ***                        STR00040
3186      C                                                                      STR00050
3187      C                                                                      STR00070
3188            COMMON T(2060),D(2060),CD(2000),ND(100)                          STR00080
3189      C                                                                      STR00090
3190            DIMENSION                                    QC(100),            STR00100
3191           1TQC(200),TSC(420),TSS(100),TWT(400),TSEC(300)                    STR00110
3192      C                                                                      STR00120
3193            EQUIVALENCE (TQC(1),T(1394)),(TSC(1),T(1594)),(TSS(1),T(1981)),  STR00130
3194           1(TW04,T(1405)),(TW09,T(1404))                                    STR00131
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CARD NO	**** CONTENTS ****	
3195	EQUIVALENCE (DC(1),D(1401)),(STRFN,D(361)),(SFMN,D(370)),	STR00140
3196	1(STRMN,D(371)),(RBMG,D(372)),(STLMN,D(375)),(STLMX,D(376)),	STR00141
3197	2(HSTMN,D(377)),(HSTMX,D(378)),(STFMX,D(379)),(STFMN,D(380)),	STR00142
3198	3(CNSID,D(461))	STR00143
3199	EQUIVALENCE (TWT(1),CD(1101)),(TSEC(1),CD(1501))	STR00150
3200	EQUIVALENCE (IDSK,ND(5)),(ISK2,ND(46)),(ISK1,ND(45)),(IL,ND(40)),STR00160	
3201	1(IK,ND(39)),(ILT,ND(34)),(IL2,ND(33)),(IL3,ND(32)),(N,ND(31)),	STR00161
3202	2(IN,ND(30)),(I,ND(29)),(LT3,ND(28)),(LT2,ND(27)),(LT1,ND(26)),	STR00162
3203	3(IBT,ND(72)),(IMX,ND(71)),(IRG,ND(70))	STR00163
3204	C	STR00220
3205	5010 IRG=ND(1)	STR00230
3206	C TEST LOC OF B/T(I) B/T(MAX)	STR00240
3207	IF (TSC(410) - TWT(307)) 610,620,620	STR00250
3208	C REGION 1 OR 3 TEST MIN B/T	STR00260
3209	610 IF (TSC(410) - TWT(308)) 611,621,621	STR00270
3210	C REGION 1 COMPUTE ASTRMIN(1) = ASTR MIN(2)	STR00280
3211	611 TSS(44)=TSS(45)/TSC(410)	STR00290
3212	613 TSS(43) = TSS(44)*(TSS(45)+TSS(46) + TSS(47))	STR00300
3213	TWT(313) = TSS(43)	STR00310
3214	TWT(314) = TSS(45)	STR00320
3215	TWT(315) = TSS(46)	STR00330
3216	TWT(316) = TSS(47)	STR00340
3217	C	STR00350
3218	IF (STRFN) 622,622,640	STR00360
3219	C B/T(I) GREATER THAN B/T(MX) REGION 2	STR00370
3220	620 IRG=ND(2)	STR00380
3221	TWT(317)=TWT(304)	STR00390
3222	TWT(313)= TWT(304)	STR00400
3223	TWT(314)= HSTMX	STR00410
3224	TWT(316)= STFMX*TSEC(222)	STR00420
3225	TWT(315)= STFMX*TSEC(223)	STR00430
3226	GO TO 502	STR00440
3227	C	STR00450
3228	C REGION 3. CALC AMIN(2).(NOT REQ FOR 1.)	STR00460
3229	621 IRG= ND(3)	STR00470
3230	TWT(314) = TSC(410)*STRMN	STR00480
3231	TWT(316) = TWT(312)*STRMN	STR00490
3232	IF (STRFN - D(1)) 622,623,630	STR00500
3233	C	STR00510
3234	C I-STR. - AMAX	STR00520
3235	622 TWT(317) = HSTMX*HSTMX/TSC(410)	STR00530
3236	GO TO 502	STR00540
3237	C	STR00550
3238	C Z(1) TYPE	STR00560
3239	623 IF (HSTMX - TWT(314)) 624,625,625	STR00570
3240	624 TWT(314) = HSTMX	STR00580
3241	625 IF (STFMX - TWT(316)) 626,627,627	STR00590
3242	626 TWT(316) = STFMX	STR00600
3243	627 TWT(313)= STRMN*(TWT(314)+TWT(316))	STR00610
3244	GO TO 640	STR00620
3245	C	STR00630
3246	C Z(2) TYPE	STR00640
3247	630 TWT(315) = STFMN	STR00650
3248	IF (HSTMX - TWT(314)) 631,631,632	STR00660
3249	631 TWT(314) = HSTMX	STR00670
3250	632 IF (TWT(316) - STFMX) 633,633,634	STR00680
3251	633 IF (STFMN - TWT(316)) 635,636,636	STR00690
3252	634 TWT(316) = STFMX	STR00700
3253	635 TWT(315) = TWT(316)	STR00710
3254	C	STR00720
3255	C CALC AREA	STR00730
3256	636 TWT(313) = STRMN*(TWT(314)+TWT(315) + TWT(316))	STR00740
3257	C	STR00750
3258	C MAX AREA -- Z(1), Z(2)	STR00760
3259	640 TWT(320)= HSTMX/TSC(410)	STR00770
3260	IF (IMX - ND(1)) 641,641,642	STR00780
3261	641 TWT(320)= STFMX/TWT(312)	STR00790
3262	642 TWT(317)= TWT(320)*TWT(308)	STR00800
3263	C	STR00810
3264	C SET AMIN1	STR00820
3265	502 TSC(391)= TSS(43)	STR00830

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CARD NO  ****                         CONTENTS                          ****
         C                                                              STR00840
         C                                                              STR00850
         C                                                              STR00860
         C    ****EXIT ****                                             STR00870
          998 RETURN                                                    STR00880
              END                                                       STR00890
         C*******************************************************************.******
         C
         C         *****SUBROUTINE STRIL*****
         C    ***STRINGER COLUMN LENGTH EVALUATION***
         C
         C*****************************************************.   ***************
         C
               SUBROUTINE  STRIL                                        STR10010
         C                                                              STR10011
         C      STRINGER INERTIA, RADIUS OF GYRATION, COLUMN LENGTH SUBROUTINE   STR10020
         C                                                              STR10030
         C                                                              STR10110
         C                                                              STR10130
               COMMON T(2060),D(2060),CD(2000),ND(100)                  STR10140
         C                                                              STR10150
               DIMENSION DC(100),TDC(200),TSC(420),TSS(100),            STR10160
              1DMTLB(17),                                               STR10161
              9TSEC(300)                                                STR10169
         C                                                              STR10170
         C                                                              STR10180
               EQUIVALENCE (TDC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961)),   STR10190
              1(DC(1),D(1401)),(TSEC(1),CD(1501)),                      STR10191
              2(PI,D(15)),                                              STR10192
              3(STRFN,D(361)),(CNSID,D(461)),                           STR10193
              4(COLID,D(393)),(CFIX,D(407)),                            STR10194
              5(DMTLB(1),T(201)),(SDMU,DMTLB(2)),                       STR10195
              9(CKSTZ,D(364)),(STLMN,D(375)),(DTC,D(462))               STR10199
         C                                                              STR10200
         C                                                              STR10240
          6000 TSC(413)= TSC(412)                                       STR10250
         C                                                              STR10260
         C         **** TEST FOR CONST ****                             STR10270
               IF (CNSID) 6001,60,6001                                  STR10280
          6001 TSC(416) = DC(3)                                         STR10290
               TSC(420) = D(1)                                          STR10300
               IF (D(2) - CNSID) 6002,6003,6004                         STR10310
         C                                                              STR10320
         C            *** FDH *** L=B, YBAR=T/2                         STR10330
          6002 TSC(398) = TSC(411)*TSC(411)/D(12)*TSC(411)              STR10340
               TSC(399) = SQRT (TSC(398)/TSC(411))                      STR10350
               TSC(413) = TSC(411)/D(2)                                 STR10360
               GO TO 662                                                STR10370
         C                                                              STR10380
         C                                                              STR10390
         C         *** HP ***                                           STR10400
          6003 TSC(416) = DTC                                           STR10410
               TSC(420) = D(4)                                          STR10420
         C                                                              STR10429
         C         ** SETUP COMMON DATA FOR PL AND HP **                STR10430
          6004 TSC(415) = TSEC(225)                                     STR10440
               TSC(414) = TSC(392) - TSC(415)                           STR10450
               TSC(417) = TSC(411) + TSC(416)                           STR10460
               TSC(418) = TSC(394)*D(19) + TSC(417)                     STR10470
               TSC(417) = TSC(417)*D(19)                                STR10480
               TSC(419) = TSC(417)                                      STR10490
               TSC(398) = TSC(414)*TSC(394)*TSC(394)                    STR10500
         C                                                              STR10509
         C             COMPUTE MOM(A) FOR PL AND HP                     STR10510
               TSC(399)=TSC(413)*TSC(417) +TSC(414)*TSC(418) +TSC(415)*TSC(419)  STR10520
               GO TO 62                                                 STR10530
         C                                                              STR10540
         C      Y(1,2,3,4)= TSK, H, F(U), F(L)                          STR10550
          60   TSC(419) = TSC(394)*D(19) + TSC(411)                     STR10560
               TSC(417) = TSC(394)                                      STR10570
               TSC(420) = TSC(419)                                      STR10580
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CARD NO	**** CONTENTS	****
3337	IF (STRFN - D(1)) 601,600,602	STRI0580
3338	C	STRI0590
3339	C ****ANGLE OR INT. Z-STR.****	STRI0600
3340	600 IF (CKSIZ - D(1)) 603,601,601	STRI0610
3341	C	STRI0619
3342	C **** I-STR AND INT. Z-STR.****	STRI0620
3343	601 TSC(417) = DC(3)	STRI0630
3344	602 TSC(420) = TSC(419) + TSC(417) + TSC(395)	STRI0640
3345	603 TSC(418) = TSC(395)*D(19) + TSC(417) + TSC(411)	STRI0650
3346	TSC(417) = TSC(411)*D(19)	STRI0660
3347	C	STRI0670
3348	C MOM(ASX)	STRI0680
3349	TSC(399)= TSC(412)*TSC(417)	STRI0690
3350	C	STRI0700
3351	C A2= A(H), A3=(A(F)U), A4=(A(F)L)	STRI0710
3352	C COMPUTE MOM(A) FOR SECTION	STRI0720
3353	DO 61 I=1,3	STRI0730
3354	TSC(I+413)= TSC(394)*TSC(I+394)	STRI0740
3355	TSC(399)=TSC(399) + TSC(I+413)*TSC(I+417)	STRI0750
3356	61 CONTINUE	STRI0760
3357	TSC(398) = TSC(414)*TSC(395)*TSC(395)	STRI0770
3358	C	STRI0780
3359	C	STRI0790
3360	C Y(BAR), I(O) FOR ELEMENTS	STRI0800
3361	62 TSC(399)=TSC(399)/TSC(382)	STRI0810
3362	C	STRI0820
3363	C	STRI0830
3364	C	STRI0840
3365	C	STRI0850
3366	C **** TEST FOR STR OR PL/HP ****	STRI0860
3367	IF (CNSID) 621,620,621	STRI0870
3368	C	STRI0879
3369	C I(O) FOR PL, HC. CLEAR TSC(416) AND TSC(420)	STRI0880
3370	621 TSC(398) = (TSC(398) + TSC(415)*TSC(416)*TSC(416) + (TSC(412)*TSC(STRI0890
3371	1411)/TSC(420)*TSC(411)))/D(12)	STRI0900
3372	TSC(416) = DC(3)	STRI0910
3373	TSC(420) = DC(3)	STRI0920
3374	GO TO 63	STRI0930
3375	C	STRI0940
3376	C I(O) FOR STR	STRI0950
3377	620 TSC(398)=(TSC(412)*TSC(411)*TSC(411) + TSC(394)*TSC(394)*(TSC(415)STRI0960
3378	1+TSC(416)) + TSC(398))/D(12)	STRI0970
3379	C	STRI0980
3380	C I(SECT)	STRI0990
3381	63 DO 64 I=1,4	STRI1000
3382	TSC(I+416) = TSC(399) - TSC(I+416)	STRI1010
3383	TSC(I+416)= TSC(I+416)*TSC(I+416)	STRI1020
3384	TSC(398)= TSC(398)+ TSC(I+412)*TSC(I+416)	STRI1030
3385	64 CONTINUE	STRI1040
3386	C	STRI1050
3387	C RESET Y(BAR), SAVE F(L). CALC RHO, L(RIB)	STRI1060
3388	65 TSC(413)=TSC(399)	STRI1070
3389	TSC(415) = TSC(397)	STRI1080
3390	TSC(398)= SQRT (TSC(398)/TSC(382))	STRI1090
3391	C	STRI1095
3392	C ***TEST FOR TYPE OF COL EQUATION **	STRI1085
3393	C **COLID=0(393). 0=SHORT COL, 1=LONG COL EQUA.**	STRI1097
3394	C *L(SHORT COL) = SQRT(C*ET*PI*PI*RHO*RHO/FCOL)*	STRI1098
3395	C *L(LONG COL) = SQRT(C*ES*PI*PI*RHO*RHO/(FCOL*(U-MU*MU)))	STRI1099
3396	650 IF (COLID) 651,651,652	STRI1100
3397	C	STRI1108
3398	C *SHORT COL EQU*	STRI1109
3399	651 TSC(387) = SQRT(CFIX*TSC(401)/TSC(381))*PI*TSC(399)	STRI1110
3400	GO TO 653	STRI1115
3401	C	STRI1118
3402	C *LONG COL EQU*	STRI1119
3403	652 TSC(387) = SQRT(CFIX*TSC(381)/TSC(400)/((D(1) - SOMU*SOMU)*TSC(381)STRI1120
3404	1))*PI*TSC(399)	STRI1121
3405	C	STRI1129
3406	C TEMP B(SPAR) = L(RIB) FOR PLATES	STRI1130
3407	C PLATES--SET ALPHA=1.0	STRI1140

CARD NO **** CONTENTS ****

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 653  TSC(414) = D(1)                                                   STR11150
      IF(D(1) - CNSID) 660,661,66                                       STR11160
C                                                                       STR11169
C                NC. T(C) IN D(462)                                     STR11170
C        B(SPAR)=F(K,ER,FC,TSK,ALPHA)                                   STR11180
 660  TSC(415) = DTC/TSC(411) + D(1)                                    STR11190
      TSC(414) = SQRT (D(3)*(TSC(415) + D(1))*TSC(415) + D(1))          STR11200
C                                                                       STR11209
C          *** COMPUTE B, SET L/L=B(ACTUAL)  ***                        STR11210
 661  TSC(397) = TOC(45)*TSC(414)*TSC(411)                              STR11220
      TSC(405) = TSC(397)                                               STR11230
 662  TSC(397) = TSC(2)                                                 STR11240
C                                                                       STR11250
C         I(0)=I(STR)/B(STR) = IN(4)/IN                                 STR11260
 66   TSC(398) = TSC(398)/TSC(2)                                        STR11270
C                                                                       STR11280
C                                                                       STR11290
C      EXIT                                                             STR11300
 69   RETURN                                                            STR11310
      END                                                               STR11320
C*************************************************************************
C
C        *****SUBROUTINE STRIB*****
C   ***RIB SYNTHESIS CONTROL - RIB T-BAR EVALUATION***
C
C*************************************************************************
C
      SUBROUTINE  STRIB                                                 STRB0010
C      RIB SUBROUTINE                                                   STRB0020
C                                                                       STRB0030
C     ***REVISION--03-23-70--ADD SKIP FOR 1/SPAR WEB STIFF ***          STRB0040
C     REVISION -- 03-10-69 -- REVISE T(K)(8) FOR RIB/SPAR               STRB0050
C      REVISION -- 01-10-68    FIX FORMAT, REVISE LINKAGES.             STRB0060
C                                                                       STRB0070
C     COMPUTE OPT TRIR, RRIB                                            STRB0080
C                                                                       STRB0090
C                                                                       STRB0100
C                                                                       STRB0120
      COMMON T(2060),D(2400),CD(2000),ND(100)                           STRB0130
C                                                                       STRB0140
      DIMENSION                                                         STRB0150
     1TOC(200),TSC(420),TSS(100),DC(100)                                STRB0160
C                                                                       STRB0170
      EQUIVALENCE (TOC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961))    STRB0180
      EQUIVALENCE (DC(1),D(1401)),(PI,D(15)),(RBMO,D(372)),             STRB0190
     1(CFRIB,D(400)),(DELTW,D(406)),(RBLCP,D(405)),(TRVT,D(397)),       STRB0191
     2(CNSID,D(461))                                                    STRB0192
      EQUIVALENCE (L1,ND(40)),(K1,ND(39)),(N1,ND(38)),(N,ND(31)),       STRB0200
     1(NO1,ND(1))                                                       STRB0201
C                                                                       STRB0230
C     SETUP CONSTANT DATA                                               STRB0240
C       D= D(TB) - 1.75 X H                                             STRB0250
 100  TSS(31) = TOC(78) - D(25)*TSC(395)                                STRB0260
C      TEST FOR ZERO OR NEG DEPTH--USE 0.50 D IF 0,-                    STRB0270
      IF (TSS(31)) 1100,1100,1101                                       STRB0280
 1100 TSS(31) = TOC(78)/D(2)                                            STRB0290
 1101 TSS(25) = TOC(72)/CFRIB*TSC(400)/TSS(31)*TSC(397)*D(2)            STRB0300
      TSS(26) = TOC(62)*TSS(31)/TOC(63)*TSS(31)                         STRB0310
      TSS(27) = TOC(63)/TSS(31)/TSS(31)                                 STRB0320
      TSS(28) = RBMO                                                    STRB0330
      TSS(30) = TSS(25)/TOC(12)                                         STRB0340
C                K(STIFF)                                               STRB0350
      TSS(32) = D(2)*PI/CFRIB*TOC(72)/TSC(397)*TSS(31)                  STRB0360
C                                                                       STRB0370
C         SETUP T(P/A) AND T(ST) AT F(CP)                               STRB0380
      TSS(29) = TSS(32)/TOC(29)                                         STRB0390
      TSS(33) = TSS(25)/TOC(5)                                          STRB0400
C         TEST T(P/A) AND T(ST) FOR INTERSECTION REGION                 STRB0410
      IF (TSS(29) - TSS(33)) 1102,111,111                               STRB0420
 1102 IF (TSS(28) - TSS(33)) 1103,121,121                               STRB0430
C                                                                       STRB0440
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CARD NO	**** CONTENTS ****	
3478	C ****TEST FOR M/SPAR****	STRB0450
3480	1103 IF (CMSID) 110,110,121	STRB0460
3481	C	STRB0470
3482	C T(P/A) GREATER - INTERESTION BETWEEN F(CP)-F(CY)	STRB0480
3483	110 TSS(13) = TSS(25)/TDC(12)	STRB0490
3484	TSS(35) = TSS(32)/TDC(38)	STRB0500
3485	C TEST AT FCY	STRB0510
3486	IF (TSS(13) - TSS(35)) 113,112,112	STRB0520
3487	C TEST MAG. OF T(ST) AT F(CY)	STRB0530
3488	C	STRB0540
3489	113 IF (TSS(20) - TSS(35)) 114,121,121	STRB0550
3490	C	STRB0560
3491	C SETUP FOR INTERPOLATION BETWEEN F(CP) AND F(CY)	STRB0570
3492	114 TSS(18) = TSS(33)/TSS(20)	STRB0580
3493	TSS(13) = TDC(5)	STRB0590
3494	C SETUP INTERPOLATION LOOP	STRB0600
3495	DO 1140 N=ND1,7	STRB0610
3496	TSS(15)=TDC(N+5)	STRB0620
3497	TSS(36) = TSS(25)/TSS(15)	STRB0630
3498	TSS(37) = TSS(32)/TDC(N+29)	STRB0640
3499	TSS(18) = TSS(36)/TSS(37)	STRB0650
3500	TSS(17) = D(1) - TSS(18)	STRB0660
3501	IF (TSS(17)) 115,116,117	STRB0670
3502	115 IF (D(8%) - TSS(17)) 1141,116,116	STRB0680
3503	1141 TSS(13) = TSS(15)	STRB0690
3504	TSS(18) = TSS(18)	STRB0700
3505	1140 CONTINUE	STRB0710
3506	116 TSS(20) = TSS(36)	STRB0720
3507	GO TO 111	STRB0730
3508	C TEST WITH EPSILON	STRB0740
3509	C INTERPOLATE FOR TH STIFF	STRB0750
3510	117 IF (D(8%) - TSS(17)) 1170,118,116	STRB0760
3511	1170 TSS(14) = TSS(18) - TSS(16)	STRB0770
3512	TSS(17) = TSS(15) - TSS(13)	STRB0780
3513	TSS(14) = TSS(13) + TSS(17)/TSS(14)*(TSS(18) - D(1))	STRB0790
3514	TSS(36) = TSS(25)/TSS(14)	STRB0800
3515	C	STRB0810
3516	CALL SS (TSS(14))	STRB0820
3517	TSS(37) = TSS(32)/TDC(38)	STRB0830
3518	TSS(17) = TSS(36)/TSS(37)	STRB0840
3519	C TEST RATIO	STRB0850
3520	IF (D(8%) - ABS (TSS(17)-D(1)))171,118,116	STRB0860
3521	117 K1=ND(2)	STRB0870
3522	C INTERPOLATE	STRB0880
3523	CALL COSP (TSS(13),TSS(18))	STRB0890
3524	TSS(20) = TSS(25)/TDC(47)	STRB0900
3525	C SETUP MINIMUM THEB FROM TMG, TMAX, TST(P)	STRB0910
3526	111 TSS(13) = TSS(20)	STRB0920
3527	112 IF (TSS(13) - TSS(30)) 119,118,118	STRB0930
3528	119 TSS(13) = TSS(30)	STRB0940
3529	118 IF (TSS(13) - TSS(20))121,120,120	STRB0950
3530	121 TSS(13) = TSS(20)	STRB0960
3531	120 DO 123 I =ND1,5	STRB0970
3532	123 TSS(I +13) = DC(3)	STRB0980
3533	C THEB SEARCH SETUP DELTA T	STRB1000
3534	TSS(24) = DELTH	STRB1010
3535	IF (TSS(13) - TSS(24)) 125,124,124	STRB1020
3536	125 TSS(24) = TSS(13)	STRB1030
3537	124 CALL SARIB (TSS(13))	STRB1040
3538	IF (ND(2) - N1) 120,126,126	STRB1050
3539	C	STRB1060
3540	C	STRB1070
3541	C	STRB1080
3542	C SEARCH LARGER T	STRB1090
3543	120 TSS(18) = TSS(40)	STRB1100
3544	TSS(15) = TSS(13) + TSS(24)	STRB1110
3545	CALL SARIB (TSS(15))	STRB1120
3546	IF (ND(2) - N1) 129,126,130	STRB1130
3547	129 TSS(13) = TSS(15)	STRB1140
3548	GO TO 120	STRB1150
3549	C R3 LESS THAN 1, INTERPOLATE, SET CID = 2	STRB1160

CARD NO **** CONTENTS ****

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   130 TSS(18) = TSS(40)                                              STRB1170
       TSS(14) = TSS(13)+ TSS(24)*(TSS(16)-D(1))/(TSS(16) - TSS(18))  STRB1180
       CALL SARIB (TSS(14))                                           STRB1190
       IF (NI - ND(2)) 131,126,131                                    STRB1200
   131 TSS(17) = TSS(40)                                              STRB1210
       KI=ND(2)                                                       STRB1220
       CALL COMP (TSS(13),TSS(16))                                    STRB1230
       TSS(23) = TOC(47)                                              STRB1240
 C                                                                    STRB1250
 C                                                                    STRB1260
 C     OPT R, TW FOUND  COMPUTE TBAR-RIB                              STRB1270
 C     TWEB = T1, EXIT SEARCH                                         STRB1280
   126 TSC(408) = TSS(23)                                             STRB1290
       CALL SARIB (TSS(23))                                           STRB1300
   132 TSC(403) = TSS(21)                                             STRB1310
       TSC(404) = TSS(20)                                             STRB1320
 C                                                                    STRB1330
 C         **** CALC T(RIB) FOR RIB/SPAR, T(ATT), T(MISC SKIN) ****   STRB1340
       TSC(407) = TSS(22)                                             STRB1350
       TSC(420) = D(24) - D(1)                                        STRB1360
       IF (TSC(420)) 140,140,141                                      STRB1370
   140 TSC(420) = D(1)/D(12)                                          STRB1380
   141 TSC(386) = TSC(408)*CFRIB/TSC(397)*TOC(78)                     STRB1390
 C                                                                    STRB1400
 C        ** TEST FOR SPARS **                                        STRB1410
       TSC(389) = DC(3)                                               STRB1420
       IF (CNSID) 142,142,143                                         STRB1430
 C            *** RIBS, COV MISC ATT ***                              STRB1440
   142 TSC(386) = TSC(386)+ RBLCP*TSC(408)/TSC(397)                   STRB1450
       TSC(389) = TSC(408)*D(24)/TSC(2)*D(2)/TSC(397)*(TSC(396) + D(23))*STRU1460
      1TSC(395)*D(25)                                                 STRB1470
 C                                                                    STRB1480
 C             *** RIB/SPAR MISC ***                                  STRB1490
   143 TSC(389) = TSC(389) + TSC(420)*TSC(386)                        STRB1500
 C                                                                    STRB1510
 C         **(MISC SKINS)**                                           STRB1520
       IF (TRVT) 145,145,144                                          STRB1530
   144 TSC(390) = DC(3)                                               STRB1540
       TSC(420) = TRVT - TSC(411)                                     STRB1550
       IF (TSC(420)) 199,199,145                                      STRB1560
   145 TSC(390) = TSC(420)/TSC(2)*RBLCP/TSC(397)*D(19)                STRB1570
 C                                                                    STRB1580
 C                                                                    STRB1590
   199 RETURN                                                         STRB1603
       END                                                            STRB1610
 C*********************************************************************
 C
 C        *****SUBROUTINE SARIB*****
 C   ***RIB T-WEB EVALUATION***
 C
 C*********************************************************************
 C
       SUBROUTINE SARIB (TABI)                                        SARI0010
 C       R, FC/FCCR, FCCR SUBR FOR TWEB                               SARI0020
 C                                                                    SARI0030
 C      REVISION -- 01-10-66 -- NEW FORMAT, REVISE LINKAGE.           SARI0040
 C                                                                    SARI0050
 C      NN, 1  R LESS THAN 1, 2 R = 1,   3 R GREATER THAN 1           SARI00( .
 C                                                                    SARI0070
 C                                                                    SARI0090
       COMMON T(2060),D(2060),CD(2000),ND(100)                        SARI0100
 C                                                                    SARI0110
       DIMENSION                                                      SARI0120
      1TOC(200),TSC(420),TSS(100)                                     SARI0130
 C                                                                    SARI0140
       EQUIVALENCE (TOC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T( 951)) SARI0150
       EQUIVALENCE (CORMN,D(403)),(CORMX,D(404))                      SARI0160
       EQUIVALENCE (NI,ND(38))                                        SARI0180
 C                                                                    SARI0190
       TSS(23)= TAB*                                                  SARI0200
       TSS(18)= TSS(25)/TSS(23)                                       SARI0210
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CARD NO    ****                         CONTENTS                              ****
           C                                                               SRR10220
                 CALL SS (TSS(19))                                         SRR10230
                 TSS(20) = TDC(38)                                         SRR10240
                 TSS(22) = (TSS(26)*TSS(23))**0.33                         SRR10250
                 IF (TSS(22) - CORMN)  199,198,197                         SRR10260
           C      RI = RMIN                                                SRR10270
             199 TSS(22) = CORMN                                           SRR10280
                 GO TO 198                                                 SRR10290
             197 IF (TSS(22) - CORMX) 198,198,196                          SRR10300
           C      RI = RMAX, FCCR = GEN.                                   SRR10310
             196 TSS(22) = CORMX                                           SRR10320
           C                                                               SRR10330
           C      FCCR = LOCAL                                             SRR10340
             198 TSS(38) = TSS(20)*TDC(61)*TSS(23)/TSS(22)                 SRR10350
                 TSS(39) = TSS(27)*TSS(20)*TSS(22)*TSS(22)                 SRR10360
           C     SETUP RATIO  R AND NN                                     SRR10370
                 TSS(21) = TSS(38)                                         SRR10380
                 IF (TSS(38) - TSS(39)) 195,195,191                        SRR10390
             191 TSS(21) = TSS(39)                                         SRR10400
             195 TSS(40) = TSS(19)/TSS(21)                                 SRR10410
                 NI = ND(1)                                                SRR10420
                 IF (TSS(40) -D(1))194,193,192                             SRR10430
             193 NI = ND(2)                                                SRR10440
                 GO TO 194                                                 SRR10450
             192 NI = ND(3)                                                SRR10460
           C                                                               SRR10470
           C     EXIT                                                      SRR10480
             194 RETURN                                                    SRR10490
                 END                                                       SRR10500
           C*******************************************************************
           C
           C        *****SUBROUTINE STWEB*****
           C   ***FRONT/REAR SPAR CAP/WEB EVALUATION***
           C
           C*******************************************************************
           C
                 SUBROUTINE  STWEB(VO,DEPTH)                               STWE0010
           C                                                               STWE0011
           C      SPAR WEB SUBR.                                           STWE0020
           C                                                               STWE0030
           C                                                               STWE0070
           C               GIVEN--V,H                                      STWE0080
           C      READ  A(WEB), TWEB                                       STWE0090
           C               IWEB=1 FOR FS, 2 FOR RS                         STWE0100
           C                                                               STWE0110
           C                                                               STWE0130
                 COMMON T(2060),D(2060),CD(2000),ND(100)                   STWE0140
           C                                                               STWE0150
                 DIMENSION TDC(200),TSC(420),TSS(100),TWT(400),TSEC(300),DC(100),  STWE0160
                1SWAST(2),SWBST(2),SWOWS(2),                               STWE0161
                2SWBMD(2),SWBCP(2),SWCST(2),                               STWE0162
                3DKS(24),SLCFS(5)                                          STWE0169
           C                                                               STWE0170
           C                                                               STWE0180
                 EQUIVALENCE (TDC(1),T(134)),(TSC(1),T(154)),(TSS(1),T(1961)),   STWE0190
                1(DC(1),D(1401)),(TWT(1),CD(1101)),(TSEC(1),CD(1501)),     STWE0191
                2(SWAST(1),D(410)),(SWBST(1),D(420)),(SWBMD(1),D(373)),    STWE0192
                3(SWBCP(1),D(423)),(SWCST(1),D(425)),(SWOWS(1),D(413)),    STWE0193
                4(DKS(1),D(950)),(SLCFS(1),D(1470)),                       STWE0194
                5(DELTM,D(422)),                                           STWE0195
                9(ISEC,ND(95)),(IK,ND(39)),(IWEB,ND(37)),(N,ND(30))        STWE0199
           C                                                               STWE0200
           C                                                               STWE0210
           C                                                               STWE0320
           C                                                               STWE0330
             200 TSS(11) = ABS(VO)                                         STWE0340
                 TSS(3) =DEPTH                                             STWE0350
           C      SETUP D FOR WEB AREA CALC                                STWE0360
                 TSS(1) = TSS(3) - TDC(112) - TDC(114)                     STWE0370
                 IF (TSS(1)) 201,201,202                                   STWE0380
             201 TSS(1) = TSS(3)                                           STWE0390
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CARD NO	**** CONTENTS	****
3692	202 N = IWEB	$TWE0400
3693	C	$TWE0410
3694	C **MOVE DATA ON N**	$TWE0420
3695	TSS(10) = TWT(N+170)	$TWE0430
3696	TSS(29) = SWBMO(N)	$TWE0440
3697	TSS(12) = TDC(54)*TDC(N+65)	$TWE0450
3698	TSS(7) = SWBST(N)	$TWE0460
3699	C	$TWE0470
3700	C **TEST FOR SHEAR=0.0**	$TWE0480
3701	IF (TSS(11)) 210,210,240	$TWE0490
3702	C	$TWE0500
3703	C **SHEAR=0.0. TEST SECTION**	$TWE0510
3704	210 IF (ISEC - ND(1)) 211,211,212	$TWE0520
3705	C	$TWE0530
3706	C *TIP. USE MIN DATA*	$TWE0540
3707	211 TSS(5) = TSS(29)	$TWE0550
3708	GO TO 213	$TWE0560
3709	C	$TWE0570
3710	C **SECT I-10, USE SECT(I-1 TIN)**	$TWE0580
3711	212 I = N*ND(7)	$TWE0590
3712	TSS(5) = TDC(I+173)	$TWE0600
3713	213 TSS(9) = TSS(10)	$TWE0610
3714	TSS(8) = DC(3)	$TWE0620
3715	GO TO 260	$TWE0630
3716	C	$TWE0640
3717	240 TSS(25) = TSS(11)/TSS(3)	$TWE1550
3718	TSS(30) = TSS(25)/TSS(15)	$TWE1570
3719	C	$TWE1580
3720	C USE LARGE TIN OF MG OR TIQ,FSPO()	$TWE1590
3721	TSS(28) = TSS(29)	$TWE1600
3722	IF (TSS(28) - TSS(30)) 241,241,250	$TWE1610
3723	241 TSS(28) = TSS(30)	$TWE1620
3724	C	$TWE1630
3725	C	$TWE1640
3726	C ***SETUP FOR PLATE STIFFENED, SHEAR RESIST. WEB ANALYSIS**	$TWE1650
3727	250 TSS(31) = TSS(1)	$TWE1660
3728	TSS(35) = TSS(7)	$TWE1670
3729	IF (TSS(35) - TSS(31)) 251,251,2510	$TWE1680
3730	251 TSS(31) = TSS(7)	$TWE1690
3731	TSS(35) = TSS(1)	$TWE1700
3732	2510 TSS(36) = TSS(31)/TSS(35)	$TWE1710
3733	TSS(33) = TSS(12)/TSS(31)/TSS(31)	$TWE1720
3734	TSS(34) = DKS(24)/TSS(1)*TSS(12)/TSS(1)	$TWE1730
3735	TSS(32) = TSS(1)/TDC(73)*TDC(84)	$TWE1740
3736	C	$TWE1750
3737	C **** INTERPOLATE FOR KS(O) ****	$TWE1760
3738	252 I = ND(1)	$TWE1770
3739	2520 IF (DKS(I+1) - TSS(36)) 2521,2523,2524	$TWE1780
3740	2521 I = I + ND(1)	$TWE1790
3741	IF (ND(10) - I) 2522,2520,2520	$TWE1800
3742	2522 I = ND(10)	$TWE1810
3743	2523 TSS(28) = DKS(I+12)	$TWE1820
3744	GO TO 253	$TWE1830
3745	2524 TSS(13) = DKS(I+1) - DKS(I)	$TWE1840
3746	TSS(14) = DKS(I+12) - DKS(I+11)	$TWE1850
3747	TSS(15) = TSS(36) - DKS(I)	$TWE1860
3748	TSS(28) = DKS(I+11) + TSS(15)*TSS(14)/TSS(13)	$TWE1870
3749	C	$TWE1880
3750	C **** COMPUTE BASIC FSCR ****	$TWE1890
3751	253 TSS(23) = (TSS(25)/TSS(26)/TSS(33))**0.3333	$TWE1900
3752	TSS(21) = TSS(25)/TSS(23)	$TWE1910
3753	IF (TSS(28) - TSS(23)) 2530,254,254	$TWE1920
3754	2530 TSS(28) = TSS(23)	$TWE1930
3755	C	$TWE1940
3756	C *** SETUP SEARCH ***	$TWE1950
3757	254 TSS(24) = TSS(28)/D(2)	$TWE1960
3758	TSS(13) = TSS(28)/D(5)	$TWE1970
3759	IF (TSS(24) - TSS(13)) 2540,2541,2541	$TWE1980
3760	2540 TSS(24) = TSS(13)	$TWE1990
3761	2541 IF (TSS(24) - DELTW) 2542,2543,2543	$TWE2000
3762	2542 TSS(24) = DELTW	$TWE2010

CARD NO **** CONTENTS ****

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C                                                                 STHE2020
C             *** POINTS 1 AND 3 ***                              STHE2030
 2543 TSS(13) = TSS(20)                                           STHE2040
      CALL SWEB (TSS(13))                                         STHE2050
      TSS(16) = TSS(22)                                           STHE2060
      IF (D(1) - TSS(16)) 255,256,256                             STHE2070
 255  TSS(15) = TSS(13) + TSS(24)                                 STHE2080
      CALL SWEB (TSS(15))                                         STHE2090
      TSS(18) = TSS(22)                                           STHE2100
      IF (D(1) - TSS(18)) 2550,2 ,2551                            STHE2110
 2550 TSS(13) = TSS(15)                                           STHE2120
      TSS(16) = TSS(18)                                           STHE2130
      GO TO 255                                                   STHE2140
C                                                                 STHE2150
C          *** POINT 2 ***                                        STHE2160
 2551 TSS(14) = (TSS(13) + TSS(15))/D(2)                          STHE2170
      CALL SWEB (TSS(14))                                         STHE2180
      TSS(17) = TSS(22)                                           STHE2190
      IF (D(1) - TSS(17)) 2552,256,2553                           STHE2200
 2552 TSS(13) = TSS(14)                                           STHE2210
      TSS(16) = TSS(17)                                           STHE2220
      GO TO 2554                                                  STHE2230
 2553 TSS(15) = TSS(14)                                           STHE2240
      TSS(18) = TSS(17)                                           STHE2250
 2554 TSS(14) = (TSS(13) + TSS(15))/D(2)                          STHE2260
      CALL SWEB (TSS(14))                                         STHE2270
      TSS(17) = TSS(22)                                           STHE2280
C                                                                 STHE2290
C            **** INTERPOLATE AT R=1.0 FOR T(WEB).  IK=2 ****     STHE2300
 2555 IK = ND(2)                                                  STHE2310
      CALL CO3P (TSS(13),TSS(16))                                 STHE2320
      TSS(23) = TOC(47)                                           STHE2330
      CALL SWEB(TSS(23))                                          STHE2340
      IF (TSS(22) - D(1)) 2556,257,2556                           STHE2350
 2556 TSS(19) = (TSS(19) + TSS(21))/D(2)                          STHE2360
      TSS(23) = TSS(25)/TSS(19)                                   STHE2370
 256  CALL SWEB (TSS(23))                                         STHE2380
C                                                                 STHE2390
C                 ******SETUP EXIT******                          STHE2400
 257  TSS(19) = TSS(25)/TSS(23)                                   STHE2410
      IF (TSS(10) - TSS(19)) 2570,2571,2571                       STHE2420
 2570 TSS(19) = TSS(10)                                           STHE2430
      TSS(21) = TSS(10)                                           STHE2440
      TSS(23) = TSS(25)/TSS(10)                                   STHE2450
 2571 TSS(5) = TSS(23)                                            STHE2460
      TSS(9) = TSS(21)                                            STHE2470
      TSS(8) = TSS(19)                                            STHE2480
C                                                                 STHE2490
C            ***EFF WEB X-SECT AREA AND A(CAPS)***                STHE2500
 260  TSS(2) = TSS(1)*TSS(5)/TSS(7)*(TSS(7) + SWWST(N)*SWKST(N))  STHE2510
      TSS(20) = (TOC(87) + TOC(88))/D(2)*SLCFS(4)                 STHE2520
      IF (TSS(20) - SLCFS(3)) 261,261,262                         STHE2530
 261  TSS(20) = SLCFS(3)                                          STHE2540
 262  TSS(6) = TSS(5)*SWBCP(N)/D(2) + TSS(20)*SWBCP(N)            STHE2550
      TSS(4) = TSS(2) + TSS(6)                                    STHE2560
      TSS(4) = SWOMS(N)*TSS(4)                                    STHE2570
C                                                                 STHE2580
C                                                                 STHE9800
C            ***EXIT***                                           STHE9990
 290  RETURN                                                      STHE9998
      END                                                         STHE9999
C*************************************************************************
C
C        *****SUBROUTINE SWEB*****
C   ***SPAR WEB CRITICAL STRESS EVALUATION***
C
C*************************************************************************
C
      SUBROUTINE SWEB(TX)                                         SWE0010
C                                                                 SWE0011
C        ****CALC. FSCR = F(FS,FC) FOR SPAR WEBS.****             SWE0020
```

```
CARD NO    ****                      CONTENTS                          ****
           C                                                         SWOE0040
           C                                                         SWOE0060
                 COMMON T(2060),D(2060),CD(2000),ND(100)             SWOE0070
           C                                                         SWOE0080
                 DIMENSION                           DC(100),        SWOE0090
                1TDC(200),TSC(420),TSS(100),                         SWOE0100
                8DKS(23)                                             SWOE0110
           C                                                         SWOE0120
                 EQUIVALENCE (TDC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961)),  SWOE0130
                1(DC(1),D(1401)),(DKS(1),D(550)),                    SWOE0131
                9(TI,TSS(23)),(RI,TSS(22))                           SWOE0132
           C                                                         SWOE0140
           C                                                         SWOE0150
           C                                                         SWOE0160
             100 TI = TX                                             SWOE0170
                 TSS(19) = TSS(25)/TI                                SWOE0180
                 TSS(27) = DKS(23)*TSS(32)/TSS(19)*TSS(32)/TSS(19) + D(1)  SWOE0190
             101 TSS(27) = SQRT (D(1) /TSS(27))*TSS(26)              SWOE0200
                 TSS(21) = TI*TSS(27)*TI*TSS(34)                     SWOE0210
                 RI = TSS(19)/TSS(21)                                SWOE0220
              90 RETURN                                              SWOE0230
                 END                                                 SWOE0240
           C*****************************************************************
           C
           C        *****SUBROUTINE EIGJC*****
           C  ***SECTION EI AND GJ STIFFNESS EVALUATION***
           C
           C*****************************************************************
           C
                 SUBROUTINE EIGJC                                    EIGJ0010
           C                                                         EIGJ0011
           C      EI, GJ CALC. SUBR -- STRENGTH AND COMPOSITE        EIGJ0020
           C                                                         EIGJ0030
           C       ID=2, CALC. FINAL COMPOSITE EI,GJ AND RATIOS      EIGJ0150
           C                                                         EIGJ0160
           C      CALC AT SEC(I)                                     EIGJ0170
           C                                                         EIGJ0180
           C                                                         EIGJ0200
           C                                                         EIGJ0210
                 COMMON T(2060),D(2060),CD(2000),ND(100)             EIGJ0220
           C                                                         EIGJ0230
                 DIMENSION                           DC(100),        EIGJ0240
                1TDC(200),TSC(420),TSS(100),TWT(400),TSEC(300),      EIGJ0250
                2TC(340),YSTRC(11),                                  EIGJ0260
                3GJROD(11),DEL(30),                                  EIGJ0270
                4YBUD(11),YBLD(11),                                  EIGJ0271
                8DNAU(11),DNAL(11)                                   EIGJ0280
           C                                                         EIGJ0290
                 EQUIVALENCE (TDC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961)),  EIGJ0300
                1(DC(1),D(1401)),(TWT(1),CD(1101)),(TSEC(1),CD(1501)),  EIGJ0301
                2(TC(1),T(980)),(DNAU(1),D(931)),(DNAL(1),D(942)),   EIGJ0302
                3(YBUD(1),T(679)),(YBLD(1),T(690)),(YSTRC(1),TSEC(166)),  EIGJ0303
                4(GJROD(1),T(668)),                                  EIGJ0304
                5(DEL(1),TWT(251)),                                  EIGJ0305
                6(DLFSC,DEL(14)),(DLRSC,DEL(18)),(DLSTU,DEL(3)),(DLSTL,DEL(8)),  EIGJ0308
                9(ISEC,ND(55)),(IVF,ND(51)),(I,ND(30))               EIGJ0309
           C                                                         EIGJ0310
           C                                                         EIGJ0390
           C                                                         EIGJ0400
           C      EI,GJ CALC -- 9-22-85                              EIGJ0410
           C                                                         EIGJ0420
           C       CHECK FOR ZERO COEFF.   NO CALC IF ANY OF FOLLOWING IS ZERO  EIGJ0430
           C       UPR,LOW(COV,SK,STR), FS,RS(COMP.,CAP,WEB)         EIGJ0440
           C      COMPUTE I AND J IN EQUIV. UPR COVER E AND G  CONVERT AREAS AND T EIGJ0450
           C      TO T(EQU) = F(G(I),E(I),G(UPR),G(LWR))             EIGJ0460
           C     EI=E(A(U)X(YCG-YBU)**2)+EL(ALX(YCG-YBL)**2)+ E.XAC(DELY)**2(FS,RS)EIGJ0470
           C      J = 4(A X A /(SUM((DS/T)(U,L,FS,RS)))              EIGJ0480
           C                                                         EIGJ0490
           C      ALL T TO HAVE ELEMENT AND SUB-COMPONENT COEFF. APPLIED FOR CALC. EIGJ0500
           C                                                         EIGJ0510
           C       TEST FOR ZERO COEFF.                              EIGJ0530
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CARD NO **** CONTENTS ****

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      TSS(7)=D(1)                                                       E1GJ0540
      DO 800 J=1,3                                                      E1GJ0550
      TSS(7) = TSS(7)*DEL(J)*DEL(J+3)*DEL(J+12)*DEL(J+16)               E1GJ0560
  800 CONTINUE                                                          E1GJ0570
      TSS(8)=D(1)                                                       E1GJ0580
      IF (TSS(7)) 850,850,810                                           E1GJ0590
C                                                                       E1GJ0600
C      TEST FOR TYPE, CLEAR WORKING DATA REGION FIRST --TSS(1-6)        E1GJ0610
  810 DO 811 J=1,6                                                      E1GJ0620
      TSS(J)=DC(3)                                                      E1GJ0630
  811 CONTINUE                                                          E1GJ0640
C                                                                       E1GJ0650
C      TEST FOR TYPE  ID=1,STRUCT.  ID=2, COMPOSITE                     E1GJ0660
      IF (ND(1) - IWF) 820,830,820                                      E1GJ0670
-                                                                       E1GJ0680
C      COMPUTE  SECTION GJ --- J(1) IN TWT(286)                         E1GJ0690
C      TWT(282)=A(SECT), 283=(W/TU+W/TL), 284=(DF/THF+DR/THR), 285=SUMDSE1GJ0700
C                                                                       E1GJ0710
C                                                                       E1GJ0720
C      SETUP TWF DATA FOR COMPOSITE CALC.                               E1GJ0730
  820 DO 821 J=1,2                                                      E1GJ0740
      TSS(J)= TDC(J+115)                                                E1GJ0750
      TSS(J+2)= TDC(J+117)                                              E1GJ0760
      TSS(J+4)= TDC(J+174)                                              E1GJ0770
  821 CONTINUE                                                          E1GJ0780
C                                                                       E1GJ0790
  830 TSS(14)=(TWT(152)+TWT(153))/D(2)                                  E1GJ0800
      TSS(15)=(TWT(150)+TWT(151))/D(2)                                  E1GJ0810
      TSS(12)=TDC(77)-TSS(14)                                           E1GJ0820
      TSS(13)=TDC(89)-TSS(15)                                           E1GJ0830
      TSS(14)=TDC(70)-TSS(15)                                           E1GJ0840
      TSS(16)=TDC(78)-TSS(15)                                           E1GJ0850
      TWT(282)= TSS(12)*TSS(16)                                         E1GJ0860
C                                                                       E1GJ0870
C      UPR AND LWR SKINS (DS/T) --- USE K=1/K(G1)                       E1GJ0880
      TWT(283)= (TSS(12)/(TWT(150)+TSS(1))) +(TSS(12)*TWT(176)/(TWT(151)E1GJ0890
     1 + TSS(2)))                                                       E1GJ0900
C                                                                       E1GJ0910
C      FS AND RS WEBS (DS/T)                                            E1GJ0920
      TWT(284)=(TSS(13)*TWT(177)/(TWT(152) + TSS(5))) + (TSS(14)*TWT(178E1GJ0930
     1)/(TWT(153) + TSS(6)))                                            E1GJ0940
C                                                                       E1GJ0950
C      SUM DS/T                                                         E1GJ0960
      TWT(285) = TWT(283) + TWT(284)                                    E1GJ0970
C                                                                       E1GJ0980
C      COMPUTE J(EQUIV) UPR.                                            E1GJ0990
      TWT(286) =D(4)*(TWT(282)*TWT(282)/TWT(285))                       E1GJ1000
C                                                                       E1GJ1009
C      GJ SECTION -- G(UPR) AT ROOM TEMP.                               E1GJ1010
  831 TSS(7) = TWT(286)*TWT(174)                                        E1GJ1020
C                                                                       E1GJ1030
C      COMPUTE SECTION EI --- I(1)EQUIV IN TWT(290) =SUM(EI)/E(UPR)     E1GJ1040
C      287= YCG(SECT.), 288=Y(LWR), 293=A(UPR), 294=A(LWR,EQUIV),       E1GJ1050
C      295= A(FS,EQUIV), 296=A(RS,EQUIV), 297=SUM(A)                    E1GJ1060
C                                                                       E1GJ1070
C     YBAR(LWR)EQUIV =(YUXAL/AU)                                        E1GJ1080
      TWT(288) = YWLD(ISEC)                                             E1GJ1090
C                                                                       E1GJ1100
C      UPR, LWR COVER AREAS                                             E1GJ1110
  832 TWT(293) = TDC(77)*((TWT(150) + TSS(1))*TSEC(240) + TSS(3) + DLSTUE1GJ1120
     1*TDC(96))                                                         E1GJ1130
      TWT(294) = TDC(77)*((TWT(151) + TSS(2))*TSEC(242) + TSS(4) + DLSTLE1GJ1140
     1*(TDC(87) - TDC(112)))                                            E1GJ1150
C                                                                       E1GJ1160
C                                                                       E1GJ1170
C      FS, RS CAPS - DC(4)=D(1401) = K FOR EI CALC WITH CAPS            E1GJ1180
      TWT(295)=DLFSC*TDC(179)*DC(4)                                     E1GJ1190
      TWT(296)=DLRSC*TDC(180)*DC(4)                                     E1GJ1200
C                                                                       E1GJ1210
C      SETUP Z COORD.  OF FS/RS CAPS                                    E1GJ1220
      TSS(25)=D(20)*TDC(114)                                            E1GJ1230
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CARD NO    ****                      CONTENTS                            ****
                 TSS(26)=D(20)*TDC(112)                                  E10J1240
                 DO 835 J=1,2                                            E10J1250
                 TSS(J+16)= (TDC(78)-TDC(J+68))/D(2)                     E10J1260
                 TSS(J+18)= TSS(J+16)+TSS(25)                            E10J1270
                 TSS(J+20)= TDC(78) -TSS(J+16) -TSS(26)                  E10J1280
                 TSS(23)=TSS(J+20)-TSS(J+18)                             E10J1290
                 IF (TSS(23)-TSS(25)-TSS(26)) 834,835,835                E10J1300
           834   TSS(24)=TSS(23)/D(2)                                    E10J1310
                 TSS(J+18)= TSS(J+18)+TSS(24)-TSS(25)                    E10J1320
                 TSS(J+20)= TSS(J+20)-TSS(24)+TSS(26)                    E10J1330
           835   CONTINUE                                                E10J1340
          C                                                              E10J1350
          C       SUM COVER + CAP AREAS                                  E10J1360
                 THT(297)= THT(293)+THT(294)+THT(295)+THT(296)           E10J1370
          C                                                              E10J1380
          C       YBAR U,L FOR FS,RS = YU,YL                             E10J1390
          C       CG OF AREAS FROM ML OF UPR COV.  -- TAKE MOM(A) ABOUT UPR ML     E10J1400
           836   THT(289) = YOUD(ISEC)*THT(293) + (TDC(78) - THT(288))*THT(294) +  E10J1410
                1 THT(295)*(TSS(19)+TSS(21))/D(2)+ THT(296)*(TSS(20)+TSS(22))/D(2) E10J1420
          C                                                              E10J1430
          C       YCG SECTION -- LESS FS,RS WEBS                         E10J1440
                 THT(287)= THT(289)/THT(297)                             E10J1450
          C                                                              E10J1460
          C       COMPUTE EI  --  SUM IN THT(29?)                        E10J1470
          C                                                              E10J1480
          C       9-22-65--- ADD I(0) UPR,LWR  I(0) LWR (TEMP) = I(0)UPR X (AU/AL) E10J1490
          C        NO COEFF. OR K(E) IN I(0) CALC.                       E10J1500
          C                                                              E10J1510
          C       I(0) TEST FOR VF                                       E10J1520
                 THT(184) = TDC(101)                                     E10J1530
                 IF (IVF - ND(2)) 842,840,842                            E10J1540
           840   IF (TDC(116)) 842,842,841                               E10J1550
           841   THT(184)=TSC(61)                                        E10J1560
          C                                                              E10J1570
          C      (SUM IO UPR,LWR ) X W X E                               E10J1580
           842   THT(290) = TDC(77)*(THT(184) + THT(184)*THT(179)*SQRT (TDC(87)/TDCE10J1590
                1(88)))                                                  E10J1600
          C                                                              E10J1610
          C       UPR, LWR  TRANSFER TERMS                               E10J1620
                 THT(291)=THT(287) - YBUD(ISEC)                          E10J1630
                 THT(291)=THT(293)*THT(291)*THT(291)                     E10J1640
                 THT(292)=TDC(70)-THT(288)-THT(287)                      E10J1650
                 THT(292)=THT(294)*THT(292)*THT(179)*THT(292)            E10J1660
                 THT(290)=THT(290)+THT(291)+THT(292)                     E10J1670
          C                                                              E10J1680
          C       FS, RS TRANSFER TERM                                   E10J1690
          C       DO CALC IN LOOP                                        E10J1700
                 DO 843 J=1,2                                            E10J1710
                 TSS(23)=THT(J+294)/D(2)                                 E10J1720
                 TSS(24)=THT(287)-TSS(J+18)                              E10J1730
                 TSS(25)= TSS(J+20)-THT(287)                             E10J1740
                 THT(J+290) = TSS(23)*THT(J+178)*(TSS(24)*TSS(24) + TSS(25)*TSS(25 E10J1750
                1)                                                       E10J1760
           843   CONTINUE                                                E10J1770
          C                                                              E10J1780
          C       SUM EQUIV. I,  COMPUTE  EI(SECT)                       E10J1790
           844   THT(292)=THT(292)+THT(291)+THT(290)                     E10J1800
                 TSS(8) = THT(173)*THT(292)                              E10J1810
          C                                                              E10J1820
          C       GJ/EI RATIO                                            E10J1830
           850   TSS(9)=TSS(7)/TSS(8)                                    E10J1840
          C                                                              E10J1850
          C       GJ(VF REQD) IN TSEC(67-77) --OLD T(VF) LOC.            E10J1860
          C        STORE ALL DATA FROM ROOT TO TIP  STORE IN COMPOSITE SECTION     E10J1870
          C                                                              E10J1880
                 I=ND(12)-ISEC                                           E10J1890
                 TSS(10)= D(1)                                           E10J1900
                 IF (TDC(74)) 852,852,851                                E10J1910
           851   TSS(10) = DC(3)                                         E10J1915
                 IF (GJROD(I)) 852,852,8510                              E10J1920
           8510  TSS(10) = TSS(7)/GJROD(I)                               E10J1925
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CARD NO **** CONTENTS ****

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 C                                                                    E1GJ1930
 C      TEST FOR STORAGE --MAKE UP TABLE IN CD(I - 132)               E1GJ1940
 C             ***SAVE TSS(7-24), THT(282-299) IN CD(1836-1872) FOR PRTB*E1GJ1950
 C             ***SAVE ON STRUCT CALC ONLY.  IVF=1***                 E1GJ1951
  852  IF (IVF - ND(1)) 8520,8520,853                                 E1GJ1960
  8520 DO 8521 J=1,18                                                 E1GJ1965
       CD(J+1836) = TSS(J+6)                                          E1GJ1970
       CD(J+1854) = THT(J+281)                                        E1GJ1980
  8521 CONTINUE                                                       E1GJ1990
 C                                                                    E1GJ2000
 C                                                                    E1GJ2010
  853  CD(I+22) = TSS(7)                                              E1GJ2020
       CD(I+33)=TSS(8)                                                E1GJ2030
       CD(I+55)=TSS(9)                                                E1GJ2040
       CD(I+77) = TSS(10)                                             E1GJ2050
       CD(I+88) =(THT(150)+TSS(1))/THT(150)                           E1GJ2060
       CD(I+99) =(THT(151)+TSS(2))/THT(151)                           E1GJ2070
       CD(I+110)=(THT(152)+TSS(5))/THT(152)                           E1GJ2080
       CD(I+121)=(THT(153)+TSS(6))/THT(153)                           E1GJ2090
 C                                                                    E1GJ2100
 C      SETUP FOR SECT. PROP. STORAGE  -- TEST FOR STFC OR COMP.      E1GJ2110
 C       ST=1, COMP=2                                                 E1GJ2120
  854  IF (IVF- ND(2)) 855,856,855                                    E1GJ2130
  855  CD(I)= TSS(7)                                                  E1GJ2140
 C      SAVE  ST. DATA                                                E1GJ2150
       CD(I+11)=TSS(8)                                                E1GJ2160
       CD(I+44)=TSS(9)                                                E1GJ2170
       CD(I+66)=TSS(10)                                               E1GJ2180
 C                                                                    E1GJ2190
 C      TSK(U,L),TBAR(U,L),TSTR,L,B,NOS,HSTR,TH(FS,RS)                E1GJ2200
       THT(338)=TDC(114)                                              E1GJ2210
       THT(339)=TDC(112)                                              E1GJ2220
       THT(340)=TDC(88)                                               E1GJ2230
       THT(341)=TDC(87)                                               E1GJ2240
       THT(342)=TDC(97)                                               E1GJ2250
       THT(343)=TDC(100)                                              E1GJ2260
       THT(344)=TDC(82)                                               E1GJ2270
       THT(345)=TDC(81)                                               E1GJ2280
       THT(346)=TDC(98)                                               E1GJ2290
       THT(347)= TDC(180)                                             E1GJ2300
       THT(348)= TDC(187)                                             E1GJ2310
       GO TO 857                                                      E1GJ2320
 C                                                                    E1GJ2330
 C      COMPOSITE DATA                                                E1GJ2340
  856  THT(338)= THT(150)+TSS(1)                                      E1GJ2350
       THT(339)= THT(151)+TSS(2)                                      E1GJ2360
       THT(340)= TSC(48)                                              E1GJ2370
       THT(341)= TDC(87)+TSS(2)+TDC(119)                              E1GJ2380
       THT(342)= TSC(57)                                              E1GJ2390
       THT(343)= TSC(60)                                              E1GJ2400
       THT(344)= TSC(42)                                              E1GJ2410
       THT(345)= TSC(41)                                              E1GJ2420
       THT(346)= TSC(58)                                              E1GJ2430
       THT(347)= THT(152)+TSS(5)                                      E1GJ2440
       THT(348)= THT(153)+ TSS(6)                                     E1GJ2450
 C                                                                    E1GJ2460
 C      COMMON ST,COMP. DATA                                          E1GJ2470
 C      Y(I),+NX,-NX (KIPS)                                           E1GJ2480
 C         ***PRINT COMPRESSION NX FOR UPR AND LWR.****               E1GJ2490
  857  THT(331)=YSTRC(I)                                              E1GJ2500
       THT(332)=TDC(72)/D(14)                                         E1GJ2510
       THT(333)=TDC(71)/D(14)                                         E1GJ2520
 C      FCU,FCL,FTU,FTL (KSI)                                         E1GJ2530
 C          ****COMPUTE TRUE AVERAGE STRESSES.****                    E1GJ2540
       THT(334)= THT(332)/THT(340)                                    E1GJ2550
       THT(335)= THT(333)/THT(341)                                    E1GJ2560
       THT(336) = THT(333)*TSEC(244)/THT(340)*DNOU(I)/DNOL(I)         E1GJ2570
       THT(337) = THT(332)*TSEC(244)/THT(341)*DNOL(I)/DNOU(I)         E1GJ2580
 C                                                                    E1GJ2590
 C      MOVE DATA - TC AND CD REGION                                  E1GJ2600
  858  N=I*ND(19)-ND(19)                                              E1GJ2610
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CARD NO   ****                    CONTENTS                        ****
          DO 859 J=1,10                                           E10J2620
          I=N+J                                                   E10J2630
          CD(I+201)=TWT(J+330)                                    E10J2640
      859 CONTINUE                                                E10J2650
      C                                                           E10J2660
      C    TEST FOR 1,2                                           E10J2670
      860 IF (IVF-ND(2)) 861,899,861                              E10J2680
      861 DO 862 J=1,10                                           E10J2690
          I=N+J                                                   E10JP700
          TC(I)=TWT(J+330)                                        E10J2710
      862 CONTINUE                                                E10J2720
      C                                                           E10J2730
      C     EXIT                                                  E10J2740
      899 RETURN                                                  E10J2750
          END                                                     E10J2760
      C**********************************************************************
      C
      C      *****SUBROUTINE VFCAL*****
      C   ***SECTION TORSIONAL STIFFNESS REQMT EVALUATION***
      C
      C**********************************************************************
      C
          SUBROUTINE VFCAL                                        VFCA0010
      C    VF SUBR -- J OR TVF COMPARISON                         VFCA0020
      C                                                           VFCA0030
      C   REVISION -- 01-11-66 -- NEW LINKAGES.                   VFCA0040
      C   REVISION -- 12-7-65 -- NEW STORAGE FORMAT  REF. TO T,D,CD BLOCKS  VFCA0050
      C   10-26-65 -- J OR TVF LOGIC                              VFCA0060
      C                                                           VFCA0070
      C                                                           VFCA0080
      C   GJVF(I) REQD IN TOC(74)                                 VFCA0090
      C    FOR EQUIV. TVF, CALC. TVF AND SET TOC(74)=TVF(I) REQD. VFCA0100
      C      IEIOJ = EIGJ CALC ID.  1 = STRUCT., 2=COMPOSITE.  SET AT 1   VFCA0110
      C                                                           VFCA0120
      C                                                           VFCA0140
      C                                                           VFCA0150
          COMMON T(2060),D(2060),CD(2000),ND(100)                 VFCA0160
      C                                                           VFCA0170
          DIMENSION                           DC(100),            VFCA0180
         1TDC(200),TSC(420),TSS(100),TWT(400),TSFC(300),YSTRC(11),   VFCA0190
         2SWBID(23),OH(3),SHRHO(2),SWBE(2)                        VFCA0200
      C                                                           VFCA0210
          EQUIVALENCE (TDC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961)))   VFCA0220
          EQUIVALENCE (GH(1),D(801)),(SDRHO,D(330)),(SDMU,D(321)),   VFCA0230
         1(SWBID(1),D(410)),(SHRHO(1),D(414)),(SWBE(1),D(416)),   VFCA0231
         2(SCFWB,D(422)),(DC(1),D(1401))                          VFCA0232
          EQUIVALENCE (TWT(1),CD(1101)),(TSEC(1),CD(1501)),       VFCA0240
         1(YSTRC(1),CD(1666))                                     VFCA0241
          EQUIVALENCE (IGW,ND(57)),(NODW,ND(56)),(ISEC,ND(55)),   VFCA0250
         1(IVFJT,ND(53)),(IB,ND(52)),(IVF,ND(51)),(IVF2,ND(50)),(N4,ND(44)),VFCA0251
         2(N3,ND(43)), N2,ND(42)),(N1,ND(41)),(N,ND(31)),(J,ND(30)),   VFCA0252
         3(IDRS,ND(24)),(IDFS,ND(23)),(ND1,ND(1))                 VFCA0253
      C     GJ STRUCT IN TSS(7), EI IN TSS(8).                    VFCA0290
      C     X-SEC A(I) IN TWT(282), P(I) MUST BE CALC.            VFCA0300
      C     COMPUTE J(VF), J(STRUCT) -- EQUIV. UPR COVER 0.       VFCA0310
      C                                                           VFCA0320
      700 TSS(1)= TSS(7)/TWT(174)                                 VFCA0330
          TSS(2)= TOC(74)/TWT(174)                                VFCA0340
          TWT(184)= TWT(282)/D(50)*TWT(282)                       VFCA0350
      C     DS(U,L,FS,RS)                                         VFCA0360
          TSS(4)=(TWT(150)+TWT(151))/D(2)                         VFCA0370
          TSS(5)=(TWT(152)+TWT(153))/D(2)                         VFCA0380
          TWT(81)=TDC(77)-TSS(5)                                  VFCA0390
          TWT(82)=TWT(61)                                         VFCA0400
          TWT(83)=TDC(88)-TSS(4)                                  VFCA0410
          TWT(84)=TDC(70)-TSS(4)                                  VFCA0420
          IF (ND(1)-IVFJT) 300,200,300                            VFCA0430
      C                                                           VFCA0440
      C                                                           VFCA0450
      C     ID=2 -- EQUIV. TVF COMPARISON   -- COMPUTE TVF        VFCA0460
      C                                                           VFCA0470
```

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CARD NO   ****                      CONTENTS                                  ****
          300 TSS(3)= THT(61)+THT(62)+THT(63)+THT(64)                       VFCA0480
              TDC(74)= TSS(2)*TSS(3)/THT(164)                                VFCA0490
          C                                                                  VFCA0500
          C     SETUP DELTA TVF IN TEST/MOVE BLOCK                           VFCA0510
          C    UPPER SKINS                                                   VFCA0520
              THT(65)=TDC(74)-THT(150)                                       VFCA0530
          C       LOWER SKINS                                                VFCA0540
              THT(66)= (TDC(74)*THT(176)) - THT(151)                         VFCA0550
          C       FRONT SPAR WEB                                             VFCA0560
              THT(67)= (TDC(74)*THT(177)) - THT(152)                         VFCA0570
          C       REAR SPAR WEB                                              VFCA0580
              THT(68)= (TDC(74)*THT(178)) - THT(153)                         VFCA0590
          C                                                                  VFCA0600
          C    GO TO COMPUTE PENALTIES -- ASSUME NO REDUCTION IN X-SEC AREA OR PVFCA0610
              GO TO 150                                                      VFCA0620
          C                                                                  VFCA0630
          C                                                                  VFCA0640
          C     ID=1 -- EQUIV. J COMPARISON -- COMPUTE DELTA J               VFCA0650
          C     DELTA J REQD IN THT(96)= JVF - J STRC                        VFCA0660
          200 THT(96)=TSS(2) - TSS(1)                                        VFCA0670
              IF (THT(96)) 199,199,201                                       VFCA0680
          C                                                                  VFCA0690
          C    J REQD -- SET UP FOR CALC.       RESOLVE TO DS/T(I) COMPARISON VFCA0700
          C   (DS/T)REQD= 4(A X A)/J(REQD), (DS/T)STRUCT.                    VFCA0710
          201 THT(96)=THT(164)/TSS(2)                                        VFCA0720
              THT(95)=THT(164)/TSS(1)                                        VFCA0730
              THT(57)=D(1)                                                   VFCA0740
              THT(58)=THT(176)                                               VFCA0750
              THT(59)=THT(177)                                               VFCA07L?
              THT(60)=THT(178)                                               VFCA0770
              DO 202 I=ND1,4                                                 VFCA0780
              THT(I+56)= THT(I+56)*THT(I+60)                                 VFCA0790
              THT(I+60)=THT(I+56)/THT(I+149)                                 VFCA0800
          202 CONTINUE                                                       VFCA0810
          C                                                                  VFCAC820
          C                                                                  VFCA0830
          C    DETERMINE AND TAG ORDER OF THICKNESS VARIATIONS FOR TU,TL,TF,TR VFCA0840
          C    --- 1,2,3,4. N1=SMALLEST, N4=LARGEST                          VFCA0850
          C    DELTA (DS/T) IN THT(96)                                       VFCA0860
              N1=ND(1)                                                       VFCA0870
              N2=ND(2)                                                       VFCA0880
              N3=ND(3)                                                       VFCA0890
              N4=ND(4)                                                       VFCA0900
              IF (THT(N2+149)-THT(N1+149)) 100,100,101                       VFCA0910
          C    T2 LESS THAN T1                                               VFCA0920
          100 N2=ND(1)                                                       VFCA0930
              N1=ND(2)                                                       VFCA0940
          101 IF (THT(N4+149)-THT(N3+149)) 102,102,103                       VFCA0950
          C    T3 LESS THAN T4                                               VFCA0960
          102 N3=ND(4)                                                       VFCA0970
              N4=ND(3)                                                       VFCA0980
          C                                                                  VFCA0990
          C    ORDER= (1,2,3,4), (2,1,3,4), (2,1,4,3), OR (1,2,4,3)          VFCA1000
          C                                                                  VFCA1010
          C    TEST N1,N3. N1 LESS THAN N2, N3 LESS THAN N4                  VFCA1020
          103 IF (THT(N3+149)-THT(N1+149)) 104,104,105                       VFCA1030
          C    N3 IS SMALLEST, SET ORDER= N3,N4,N1,N2 FROM N1,N2,N3,N4       VFCA1040
          104 N=N1                                                           VFCA1050
              N1=N3                                                          VFCA1060
              N3=N                                                           VFCA1070
              N=N4                                                           VFCA1080
              N4=N2                                                          VFCA1090
              N2=N                                                           VFCA1100
          C    IF N1 IS LESS, ORDER IS N1,N2,N3,N4                           VFCA1110
          C                                                                  VFCA1120
          C    ORDER IS CURRENT (N1,N2,N3,N4) OR (N3,N4,N1,N2). FIRST N IS SMALLVFCA1130
          C    TEST N2-N3 OK IF (-,0), TEST N2-N4 IF (+)                     VFCA1140
          C                                                                  VFCA1150
          105 IF (THT(N3+149) - THT(N2+149)) 106,110,110                     VFCA1160
          C    N3 IS LESS THAN N2. SET ORDER TO N1,N3,N2,N4  AND TEST N3 N4  VFCA1170
          106 N=N2                                                           VFCA1180
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CARD NO **** CONTENTS ****

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      N2=N3                                                           VFCA1190
      N3=N                                                            VFCA1200
      IF (TWT(N4+149) - TWT(N3+149)) 107,110,110                      VFCA1210
C                                                                     VFCA1220
C      N4 LESS THAN N3.  SET ORDER TO N1,N2,N4,N3                     VFCA1230
  107 N=N4                                                            VFCA1240
      N4=N3                                                           VFCA1250
      N3=N                                                            VFCA1260
C                                                                     VFCA1270
C      ORDER  G(DS/T), G(DS), T DATA ACCORDING TO N1,N2,N3,N4 VALUES  VFCA1280
C                                                                     VFCA1290
  110 DO 111 I=ND1,12                                                 VFCA1300
      TWT(I+64)=DC(3)                                                 VFCA1310
  111 CONTINUE                                                        VFCA1320
C      SETUP LOOP TO DO CALC.                                         VFCA1330
      J=1                                                             VFCA1340
      N=N1                                                            VFCA1350
      TWT(77)=TWT(N2+149)                                             VFCA1360
      TWT(90)=DC(3)                                                   VFCA1370
      TWT(78)=DC(3)                                                   VFCA1380
C     GO TO COMPUTE ON N1                                             VFCA1390
      GO TO 120                                                       VFCA1400
C                                                                     VFCA1410
C      SETUP FOR N2,N3,N4                                             VFCA1420
  112 J=J+ND(1)                                                       VFCA1430
      GO TO (113,113,114,115),J                                       VFCA1440
C      N2                                                             VFCA1450
  113 N=N2                                                            VFCA1460
      TWT(77)=TWT(N3+149)                                             VFCA1470
      GO TO 120                                                       VFCA1480
C      N3                                                             VFCA1490
  114 N=N3                                                            VFCA1500
      TWT(77)=TWT(N4+149)                                             VFCA1510
      GO TO 120                                                       VFCA1520
C      N4                                                             VFCA1530
  115 N=N4                                                            VFCA1540
C                                                                     VFCA1550
C       SETUP AND COMPUTE -- DATA ON N, STORG ON I                    VFCA1560
C      TWT(96)= DS/T(REQD), TWT(95)=DS/T(STRUCT)                      VFCA1570
C       DS(I) X G(I)/G(U.C.) = DS(I)X K(G)                            VFCA1580
C                                                                     VFCA1590
  120 TWT(J+78)=TWT(N+60)                                             VFCA1600
C      ( DS(I) X K(G))/T(I)                                           VFCA1610
      TWT(J+82)=TWT(N+56)                                             VFCA1620
C      T(I)                                                           VFCA1630
      TWT(J+86)= TWT(N+149)                                           VFCA1640
C       SUM DS/T  LESS  (DS/T(I)) - DS/T(I-1)                         VFCA1650
      TWT(95)= TWT(95) - TWT(J+78) - TWT(78)                          VFCA1660
C       SUM  DS(I) X K(G)                                             VFCA1670
      TWT(J+90)= TWT(J+82)+TWT(J+89)                                  VFCA1680
      GO TO (121,121,121,123),J                                       VFCA1690
C                                                                     VFCA1700
C      N1,N2,N3  -- COMPUTE SUM(DS/T)I/T(I+1)- SUM(DS/T)I/T(I)        VFCA1710
  121 TWT(J+72) = TWT(77) - TWT(J+86)                                 VFCA1720
C                                                                     VFCA1730
C        DS/T(I)= DS(I)/T(I+1)                                        VFCA1740
      TWT(78) = TWT(J+90)/TWT(77)                                     VFCA1750
C                                                                     VFCA1760
C     (DS/T)REQD IS POSITIVE                                          VFCA1770
C       COMPUTE NEW (DS/T)STRUCT WITH T(I+1)                          VFCA1780
C      TEST DS/T(CALC) WITH DS/T(REQD)  +,0 OK, - DO NEXT N           VFCA1790
      TWT(95)= TWT(95)+TWT(78)                                        VFCA1800
      IF (TWT(95)-TWT(96)) 122,124,112                                VFCA1810
C                                                                     VFCA1820
C      EXCESS T(I). RECOMPUTE DELTA T(I)                              VFCA1830
  122 TWT(95)=TWT(95) - TWT(78)                                       VFCA1840
C                                                                     VFCA1850
C      DELTA(DS/T(I)) = DS/T(REQD) - SUM DS/T(I+1 TO N)               VFCA1860
  123 TWT(J+72)= (TWT(J+90)/(TWT(96)-TWT(95))) - TWT(J+86)            VFCA1870
C                                                                     VFCA1880
C                                                                     VFCA1890
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CARD NO   ****                        CONTENTS                         ****
      C     SUM TOTAL DELTA TVF FOR EACH COMPONENT  IN REVERSE ORDER N4-N1   VFCA1900
       124  THT(72)=THT(76)                                                  VFCA1910
            THT(71)=THT(75)+THT(72)                                          VFCA1920
            THT(70)=THT(74)+THT(71)                                          VFCA1930
            THT(69)=THT(73)+THT(70)                                          VFCA1940
      C                                                                      VFCA1950
      C      STORE FINAL DELTA TVF FOR FINAL WEIGHT CALC.                    VFCA1960
            THT(N1+64)=THT(69)                                               VFCA1970
            THT(N2+64)=THT(70)                                               VFCA1980
            THT(N3+64)=THT(71)                                               VFCA1990
            THT(N4+64)=THT(72)                                               VFCA2000
      C                                                                      VFCA2010
      C      MOVE TO WORKING LOC                                             VFCA2020
      C       TEST FOR 0.0 AND (-)                                           VFCA2030
      C                                                                      VFCA2040
      C        UPPER SKINS                                                   VFCA2050
       150  IF (THT(65)) 152,152,151                                         VFCA2060
       151  TDC(116)=THT(65)                                                 VFCA2070
            IVF = ND(2)                                                      VFCA2080
      C                                                                      VFCA2090
      C         LOWER SKINS                                                  VFCA2100
       152  IF (THT(66)) 154,154,153                                         VFCA2110
       153  TDC(117)=THT(66)                                                 VFCA2120
            IVF = ND(2)                                                      VFCA2130
      C                                                                      VFCA2140
      C         FRONT SPAR WEB                                               VFCA2150
       154  IF (THT(67)) 156,156,155                                         VFCA2160
       155  TDC(175)=THT(67)                                                 VFCA2170
            IVF = ND(2)                                                      VFCA2180
      C                                                                      VFCA2190
      C         REAR SPAR WEB                                                VFCA2200
       156  IF (THT(68)) 199,199,157                                         VFCA2210
       157  TDC(176)=THT(68)                                                 VFCA2220
            IVF = ND(2)                                                      VFCA2230
      C       GO TO COMPUTE PENALTIES --- EXIT                               VFCA2240
      C                                                                      VFCA2250
      C                                                                      VFCA2260
      C      EXIT FROM  SUBR                                                 VFCA2270
       199  RETURN                                                           VFCA2280
            END                                                              VFCA2290
      C*********************************************************************
      C
      C         *****SUBROUTINE WTCAL*****
      C   ***SECTION/PANEL WEIGHT EVALUATION***
      C
      C*********************************************************************
      C
            SUBROUTINE WTCAL                                                 WTCA0010
      C                                                                      WTCA0011
      C       PANEL WT CALC. SUBR -- INCL LINK TO WTPIN, RTRIB, BHOUT SUBR   WTCA0020
      C                                                                      WTCA0030
      C                                                                      WTCA0040
      C                                                                      WTCA0160
      C      IC=1 DO AREA ONLY                                               WTCA0170
      C      IC=2 DO PNL WT TOO                                              WTCA0180
      C                                                                      WTCA0190
      C                                                                      WTCA0210
            COMMON T(2060),D(2060),CD(2000),ND(100)                          WTCA0220
      C                                                                      WTCA0230
            DIMENSION DC(100),TDC(200),TSC(420),TSS(100),                    WTCA0240
           1TWT(400),TSEC(300),TC(340),                                      WTCA0241
           2YSTRC(11),DEL(30),DLPNL(10),                                     WTCA0242
           3WPLLE(12),WPLTE(12),                                             WTCA0243
           4WTIP(4),DTTRB(2),DPCDL(10),DTBX(32),                             WTCA0244
           5WPNLS(11),TPNLW(11),TBCWT(11),                                   WTCA0245
           6TBWPI(11),VFWPI(11),TWPI(11),                                    WTCA0246
           7BWOMS(2),                                                        WTCA0247
           8DNKI1(11),DEFF1(11)                                              WTCA0249
      C                                                                      WTCA0250
      C                                                                      WTCA0260
            EQUIVALENCE (DC(1),D(1401)),(TDC(1),T(1341)),(TSC(1),T(1541)),   WTCA0270
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CARD NO	**** CONTENTS ****	
0002	1(TSS(1),3(198)),(TWT(1),CD(110)),(TSEC(1),CD(150)),	MTCA0271
0003	2(SDRHO,TWT(175)),(DLPNL(1),T(177)),	MTCA0272
0004	3(YSTAC(1),TSEC(166)),(CNSID,D(168)),(NTIP(1),T(841)),	MTCA0273
0005	4(DIBX(1),D(1088)),(DTTAB(1),T(666)),(DPCOL(1),T(220)),	MTCA0274
0006	5(NPLLE(1),T(205)),(NPLTE(1),T(297)),(TC(1),T(960)),	MTCA0275
0007	6(NPNLS(1),T(645)),(TPNLW(1),T(856)),(TBCWT(1),T(789)),	MTCA0276
0008	7(TBWP(1),T(745)),(WFWPE(1),T(758)),(TNBP(1),T(778)),	MTCA0277
0009	8(DNX(1(1),T(723)),(DEFF(1)),T(800)),	MTCA0278
0010	9(1SEC,ND(55)),(IC,ND(48)),(ND1,ND(1)),(N,ND(20)),(I,ND(29))	MTCA0279
0011	C	MTCA0280
0012	C	MTCA0290
0013	EQUIVALENCE (DEL(1),TWT(251)),(DLLWG,T(197)),(DLTBX,T(188)),	MTCA0300
0014	1(DELLE,T(189)),(DELTE,T(190)),(DHISC,T(191)),	MTCA0301
0015	2(DLCWU,DEL(1)),(DLSTU,DEL(3)),	MTCA0302
0016	3(DLCWL,DEL(4)),(DLSTL,DEL(6)),	MTCA0303
0017	4(DISKH,DEL(7)),(DLATT,DEL(8)),	MTCA0304
0018	5(DLIRB,DEL(9)),(DLIRW,DEL(10)),(DLIRH,DEL(11)),	MTCA0305
0019	6(S4095(1),D(410)),	MTCA0306
0020	8(DELFS,DEL(13)),(DLFSC,DEL(14)),(DLFSH,DEL(16)),	MTCA0308
0021	9(DELRS,DEL(17)),(DLRSC,DEL(18)),(DLRSH,DEL(20))	MTCA0309
0022	C	MTCA0310
0023	C	MTCA0320
0024	C	MTCA0390
0025	C SETUP IC	MTCA0400
0026	C TIP, IC=1	MTCA0410
0027	C	MTCA0420
0028	700 N = ND(12) - ISEC	MTCA0430
0029	IF (IC - ND(1)) 701,701,710	MTCA0440
0030	C	MTCA0448
0031	C **CLEAR TWT(1-149, 215-226)**	MTCA0449
0032	701 DO 702 I=1,149	MTCA0450
0033	TWT(I) = DC(3)	MTCA0460
0034	702 CONTINUE	MTCA0470
0035	DO 703 I=1,12	MTCA0480
0036	TWT(I+214) = DC(3)	MTCA0490
0037	703 CONTINUE	MTCA0500
0038	GO TO 711	MTCA0510
0039	C	MTCA0520
0040	C COMPUTE AREAS FOR SEC(K) IN EQUIVALENT TBAR(UPR COVER)	MTCA0530
0041	C APPLY ELEMENT COEFF.	MTCA0540
0042	C DEL(I)=(TSKU,TSKL,TWFS,TWRS) IN TWT(150,151,152,153)	MTCA0550
0043	C DENSITY FACTORS RHO(I)/RHO(UPR) IN TWT(185,183,184)	MTCA0560
0044	C SUM TWF LWR,FS,RS ARE ALL IN EQU UPR(T)	MTCA0570
0045	C *** APPLY EFF WIDTH TO SKINS ***	MTCA0580
0046	710 TWT(186) = ABS(YSTAC(ISEC) - YSTAC(ISEC-1))	MTCA0585
0047	C	MTCA0590
0048	711 TWT(121) = TWT(150)*TSEC(240)	MTCA0600
0049	TWT(122) = TWT(185)*TWT(151)*TSEC(242)	MTCA0610
0050	TWT(123) = TDC(89)	MTCA0620
0051	TWT(124) = TDC(86)*DLSTU*TSEC(241)	MTCA0630
0052	TWT(125) = (TDC(87) - TDC(112))*TWT(185)*DLSTL*TSEC(243)	MTCA0640
0053	TWT(126)=(TDC(90)+TDC(93))*DLSKH	MTCA0650
0054	TWT(127)=(TDC(169)+TDC(171))*TWT(185)*DLSKH	MTCA0660
0055	TWT(128)=(TDC(91)+TDC(170)*TWT(185))*DLATT	MTCA0370
0056	TWT(129)= TDC(92)*DLIRH/TSEC(233)	MTCA0680
0057	C	MTCA0690
0058	C	MTCA0700
0059	C DELTA WF	MTCA0710
0060	TWT(130) = TDC(116)*TSEC(240)	MTCA0720
0061	TWT(131) = TWT(185)*TDC(117)*TSEC(242)	MTCA0730
0062	TWT(132) = TDC(118)*TSEC(241)	MTCA0740
0063	TWT(133) = TDC(119)*TWT(185)*TSEC(243)	MTCA0750
0064	TWT(140) = TDC(120)*TDC(77)	MTCA0760
0065	TWT(141)= TSC(36)*TDC(77)	MTCA0770
0066	TWT(142)= TSC(38)*TWT(185)*TDC(77)	MTCA0780
0067	TWT(143)= TSC(37)*TDC(77)	MTCA0790
0068	TWT(144)= TDC(77)*TSC(39)	MTCA0800
0069	C	MTCA0810
0070	C ***TEST FOR H/SPAR, HC, FDH.***	MTCA0820
0071	IF (CNSID) 712,713,712	MTCA0830
0072	712 TWT(124) = TWT(124)/TSEC(241)	MTCA0840

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CARD NO   ****                        CONTENTS                              ****
              TMT(125) = TMT(125)/TSEC(243)                                 MTCA0850
              TMT(132) = TMT(132)/TSEC(241)                                 MTCA0860
              TMT(133) = TMT(133)/TSEC(243)                                 MTCA0870
        C                                                                   MTCA0880
         713  DO 714 I=1,13                                                 MTCA0890
              TMT(I+120)=TMT(I+120)*TDC(77)                                 MTCA0900
         714  CONTINUE                                                      MTCA0910
        C                                                                   MTCA0920
        C              ***FS/RS AREAS.  APPLY LENGTH CORRECTION FACTORS***  MTCA0930
         715  TMT(134) = TDC(179)*TMT(183)*TSEC(270)                        MTCA0940
              TMT(135) = TDC(186)*TMT(184)*TSEC(271)                        MTCA0950
              TMT(136) = TDC(181)*TMT(183)*TSEC(270)                        MTCA0960
              TMT(137) = TDC(188)*TMT(184)*TSEC(271)                        MTCA0970
              TMT(138)=TDC(177)*TSEC(270)                                   MTCA0980
              TMT(139)=TDC(178)*TSEC(271)                                   MTCA0990
        C                                                                   MTCA1000
        C                                                                   MTCA1010
        C                                                                   MTCA1020
        C                                                                   MTCA1030
        C      TEST FOR ROOT RIB  DO RR ON I=11  COMPUTE WT, STORE  IN TMT(25)  MTCA1040
              IF (ND(11) - ISEC) 716,716,717                                MTCA1050
         716  CALL RIRIB                                                    MTCA1060
        C                                                                   MTCA1070
        C      DO BLHD AND JOINTS                                           MTCA1080
         717  CALL BHDJT                                                    MTCA1090
        C                                                                   MTCA1100
              IF (TMT(190)) 718,718,7170                                    MTCA1110
        7170 IF (TMT(190) - TMT(191)) 7171,718,718                          MTCA1115
        7171 TMT(191) = TMT(190)                                            MTCA1120
        C                                                                   MTCA1130
        C       WT/IN                                                       MTCA1140
         718  CALL WTPIN                                                    MTCA1150
        C                                                                   MTCA1160
        C              *CONC JT/BLHD TO INBD LOC**                          MTCA1170
              TMT(216) = TMT(190)                                           MTCA1180
              TMT(217) = TMT(187)                                           MTCA1190
              TMT(218) = TMT(188)                                           MTCA1200
              TMT(219) = TMT(189)                                           MTCA1210
        C                                                                   MTCA1220
              TMT(220) = TMT(191)                                           MTCA1230
        C                                                                   MTCA1238
        C              **INCL. DELTA COV(UPR,LWR) IN TOTALS**               MTCA1239
              TMT(215) = TMT(216) + DLCVU*TMT(217) + DLCVL*TMT(218) + TMT(219) +MTCA1240
             1 TMT(220)                                                     MTCA1241
        C                                                                   MTCA1250
        C                                                                   MTCA1260
        C              **TEST FOR SECTION.  1=TIP, 11=ROOT**                MTCA1270
         719  IF (ISEC - ND(10)) 720,720,722                                MTCA1280
         720  IF (ISEC - ND(1))  721 721,723                                MTCA1290
        C                                                                   MTCA1300
        C              **PROCESS TIP DATA**                                 MTCA1310
        C             ***SETUP OBD PNL WT DATA***                           MTCA1320
        C               *W(OBD) = LE, TE, TIP, DTTRB(2), MISC*              MTCA1330
         721  TMT(50) = WTIP(1)                                             MTCA1340
              TMT(146) = DLTBX*DTTRB(2)                                     MTCA1350
              TMT(147) = DELLE*WPLLE(12)                                    MTCA1360
              TMT(148) = DELTE*WPLTE(12)                                    MTCA1370
              TMT(145) = TMT(50) + TMT(146) + TMT(147) + TMT(148)           MTCA1380
              TM('149) = DMISC*TMT(145)                                     MTCA1390
              TMT(155) = DELWD*(TMT(145) + TMT(149))                        MTCA1400
              TMT(30) = CTTRB(2)                                            MTCA1410
              TMT(391) = DTTRB(2)                                           MTCA1415
              TMT(387) = TMT(146) + TMT(146)    SC                          MTCA1416
              TMT(45) = TMT(145)                                            MTCA1420
              TMT(40) = TMT(145)                                            MTCA1430
              TMT(41) = TMT(145)                                            MTCA1440
              TMT(46) = TMT(146)                                            MTCA1450
              TMT(1) = TMT(146)                                             MTCA1460
              TMT(47) = TMT(147)                                            MTCA1470
              TMT(48) = TMT(148)                                            MTCA1480
              TMT(49) = TMT(149)                                            MTCA1490
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CARD NO  ****                         CONTENTS                           ****
         C                                                               WTCA1500
         C                **PNL SUM-OBD**                                WTCA1510
               TWT(60) = TWT(145)                                        WTCA1520
               TWT(61) = TWT(146)                                        WTCA1530
               TWT(62) = TWT(147)                                        WTCA1540
               TWT(63) = TWT(148)                                        WTCA1550
               TWT(64) = TWT(149)                                        WTCA1560
               GO TO 750                                                 WTCA1570
         C                                                               WTCA1580
         C              ***PROCESS RT RIB--SECTION 1 AND IBD PNL DATA*** WTCA1590
         C                *WI(IBD) = LE, TE, DTRIB(2)*                   WTCA1600
           722 TWT(54) = DLTBX*TWT(35)                                   WTCA1610
               TWT(391) = DTTRB(1) + TWT(35)                             WTCA1615
               TWT(56) = DLTBX*DTTRB(1) + TWT(54)                        WTCA1620
               TWT(387) = TWT(56) + TWT(58)*DMISC                        WTCA1625
               TWT(57) = DELLE*WPLLE(1)                                  WTCA1630
               TWT(58) = DELTE*WPLTE(1)                                  WTCA1640
               TWT(55) = TWT(56) + T' (57) + TWT(58)                     WTCA1650
               TWT(58) = DMISC*TWT(55)                                   WTCA1660
               TWT(55) = DELWG*(TWT(55) + TWT(59))                       WTCA1670
         C                                                               WTCA1680
         C                *TEMP T-TAIL*                                  WTCA1690
               TWT(67) = TWT(56) + TWT(146)                              WTCA1700
               TWT(66) = TWT(67) + TWT(70)                               WTCA1710
               TWT(51) = TWT(66)                                         WTCA1720
               GO TO 730                                                 WTCA1730
         C                                                               WTCA1740
         C              ***PROCESS CONC WTS AT SECT(2-11)***             WTCA1750
         C                *ASSUME .5 OF WT IBD FOR PNLS 2-9, 1.0 WT FOR SECT 1.*  WTCA1760
           723 DO 724 I=1,6                                              WTCA1770
               TWT(I+214) = TWT(I+214)/D(2)                              WTCA1780
           724 CONTINUE                                                  WTCA1790
         C                                                               WTCA1800
         C              **PANELS 1-10. PROCESS DISTRIBUTED WEIGHTS       WTCA1810
           730 TWT(182) = TWT(166)*SORWD/D(2)                            WTCA1820
         C                                                               WTCA1830
         C              **WT OF SPANWISE MISC. SKINS AT FS/RS**          WTCA1840
               TWT(185) = TWT(182)*DLSKM*TSEC(270)*(TWT(193) + TWT(198)) WTCA1850
               TWT(186) = TWT(182)*DLSKM*TSEC(271)*(TWT(194) + TWT(198)) WTCA1860
         C                                                               WTCA1870
         C              **DIST. WTS(RAW) AT PNL(I)**                     WTCA1880
               DO 731 I=1,24                                             WTCA1890
               TWT(I+72) = TWT(182)*(TWT(I+120) + TWT(I+226))            WTCA1900
           731 CONTINUE                                                  WTCA1910
         C                                                               WTCA1919
         C              ***PROCESS PNL(I) DIST. WTS***                   WTCA1920
         C                *UPR/LWR COV*                                  WTCA1930
               TWT(88) = DLCVU*(TWT(73) + TWT(76) + TWT(78) + TWT(185))  WTCA1940
               TWT(9) = TWT(9) + TWT(73)                                 WTCA1950
               TWT(10) = TWT(10) + TWT(76)                               WTCA1960
               TWT(11) = TWT(11) + TWT(78) + TWT(185)                    WTCA1970
         C                                                               WTCA1980
               TWT(90) = DLCVL*(TWT(74) + TWT(77) + TWT(78) + TWT(186))  WTCA1990
               TWT(12) = TWT(12) + TWT(74)                               WTCA2000
               TWT(13) = TWT(13) + TWT(77)                               WTCA2010
               TWT(14) = TWT(14) + TWT(78) + TWT(186)                    WTCA2020
         C                                                               WTCA2030
         C                *INTERM. RIBS*                                 WTCA2040
               TWT(101) = TWT(75)*DLIRB*DLIRM                            WTCA2050
         C                                                               WTCA2060
         C                *FRONT/REAR SPARS                              WTCA2070
               TWT(102) = TWT(86)/SWOMS(1)                               WTCA2080
               TWT(150) = (TWT(86) - TWT(102))*DLFSM                     WTCA2090
               TWT(158) = (TWT(102) - TWT(88))*TWT(152)/TDC(100)         WTCA2100
               TWT(16) = TWT(16) + TWT(158)                              WTCA2110
               TWT(157) = DLFSC*TWT(88)                                  WTCA2120
               TWT(15) = TWT(15) + TWT(157)                              WTCA2130
               TWT(102) = DELFS*(TWT(157) + TWT(158))                    WTCA2140
         C                                                               WTCA2150
               TWT(103) = TWT(87)/SWOMS(2)                               WTCA2160
               TWT(162) = (TWT(87) - TWT(103))*DLRSM                     WTCA2170
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CARD NO **** CONTENTS ****

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      TWT(161) = (TWT(103) - TWT(89))*TWT(153)/TOC(187)               MTCA2180
      TWT(18) = TWT(18) + TWT(161)                                    MTCA2190
      TWT(160) = DLRSC*TWT(89)                                        MTCA2200
      TWT(17) = TWT(17) + TWT(160)                                    MTCA2210
      TWT(103) = DELRS*(TWT(160) + TWT(161))                          MTCA2220
C                                                                     MTCA2230
C             *MISC ATT                                               MTCA2240
      TWT(104) = TWT(80) + TWT(81) + TWT(159) + TWT(162)              MTCA2250
C                                                                     MTCA2260
C             *DELTA VF*                                              MTCA2270
C             *UPR COV*                                               MTCA2280
      TWT(115) = TWT(82) + TWT(84) + TWT(93)                          MTCA2290
      TWT(19) = TWT(19) + TWT(82)                                     MTCA2300
      TWT(20) = TWT(20) + TWT(84)                                     MTCA2310
      TWT(21) = TWT(21) + TWT(93)                                     MTCA2320
C                                                                     MTCA2330
C             *LWR COV*                                               MTCA2340
      TWT(116) = TWT(83) + TWT(85) + TWT(94)                          MTCA2250
      TWT(22) = TWT(22) + TWT(83)                                     MTCA2260
      TWT(23) = TWT(23) + TWT(85)                                     MTCA2270
      TWT(24) = TWT(24) + TWT(94)                                     MTCA2280
C                                                                     MTCA2290
C             *RIBS*                                                  MTCA2300
      TWT(117) = TWT(92)                                              MTCA2310
      TWT(25) = TWT(25) + TWT(92)                                     MTCA2320
C                                                                     MTCA2330
C             *FS/RS*                                                 MTCA2340
      TWT(118) = TWT(90)                                              MTCA2350
      TWT(26) = TWT(26) + TWT(90)                                     MTCA2360
      TWT(119) = TWT(91)                                              MTCA2370
      TWT(27) = TWT(27) + TWT(91)                                     MTCA2380
C                                                                     MTCA2390
C             *MISC ATT*                                              MTCA2400
      TWT(120) = TWT(95) + TWT(96)                                    MTCA2410
      TWT(28) = TWT(28) + TWT(95)                                     MTCA2420
      TWT(29) = TWT(29) + TWT(96)                                     MTCA2430
C                                                                     MTCA2440
            **TOTAL VF**                                              MTCA2450
      TWT(100) = TWT(115) + TWT(116) + TWT(117) + TWT(118) + TWT(119) + MTCA2460
     1TWT(120)                                                        MTCA2470
C                                                                     MTCA2480
C           **TOTAL BOX, PNL(1)--ST. ONLY**                           MTCA2490
      TWT(97) = TWT(98) + TWT(99) + TWT(101) + TWT(102) + TWT(103) + TWTMTCA2500
     1(104)                                                           MTCA2510
C                                                                     MTCA2520
C           **PROCESS LOCAL PANEL DELTA WTS--INPUT WT, PNL DELTA,     MTCA2530
C             COL FTGS AND BLKD/JTS**                                 MTCA2540
  732 TWT(107) = DTBX(N+10)                                           MTCA2550
      TWT(106) = DLPNL(N)*TWT(97) - TWT(97)                           MTCA2560
      TWT(108) = DPCOL(N)                                             MTCA2570
      DO 733 I=1,6                                                    MTCA2580
      TWT(I+108) = TWT(I+214) + TWT(I+220)                            MTCA2590
  733 CONTINUE                                                        MTCA2600
      TWT(105) = TWT(106) + TWT(107) + TWT(108) + TWT(109)            MTCA2610
C                                                                     MTCA2620
C           **APPLY DELTA BOX TO DIST. AND LOCAL WTS   ADD VF TO BOX*MTCA2630
      TWT(97) = DLTBX*TWT(97) + TWT(100)                              MTCA2640
      TWT(105) = DLTBX*TWT(105)                                       MTCA2650
C                                                                     MTCA2660
C           **SUM INTO CUM WTS BLOCK**                                MTCA2670
      TWT(1) = TWT(1) + TWT(97) + TWT(105)                            MTCA2680
      DO 734 I=1,7                                                    MTCA2690
      TWT(I+1) = TWT(I+1) + TWT(I+97)                                 MTCA2700
  734 CONTINUE                                                        MTCA2710
      TWT(2) = TWT(2) + TWT(111)*DLCWU                                MTCA2720
      TWT(3) = TWT(3) + TWT(112)*DLCWL                                MTCA2730
      TWT(8) = TWT(8) + TWT(113)                                      MTCA2740
      TWT(9) = TWT(5) - TWT(114)                                      MTCA2750
      TWT(53) = TWT(53) + TWT(108)                                    MTCA2765
      TWT(11) = TWT(11) + TWT(111)                                    MTCA2760
      TWT(14) = TWT(14) + TWT(112)                                    MTCA2761
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CARD NO **** CONTENTS ****

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      DO 735 I=1,5                                                      MTCA2770
      TWT(I+29) = TWT(I+29) + TWT(I+109)                                MTCA2780
  735 CONTINUE                                                          MTCA2790
C                                                                       MTCA2800
C             ***TOTALS SUMMARY***                                      MTCA2810
  738 TWT(61) = TWT(97) + TWT(105)                                      MTCA2820
      TWT(85) = TWT(100)                                                MTCA2830
      TWT(62) = WPLLE(N+1)*DELLE                                        MTCA2840
      TWT(63) = WPLTE(N+1)*DELTE                                        MTCA2850
      TWT(60) = TWT(61) + TWT(62) + TWT(63)                             MTCA2860
      TWT(64) = DMISC*TWT(60)                                           MTCA2870
      TWT(80) = DELWD*(TWT(60) + TWT(64))                               MTCA2880
C                                                                       MTCA2890
C                                                                       MTCA2900
C              **CUM TOTALS**                                           MTCA2910
  740 DO 741 I=1,5                                                      MTCA2920
      TWT(I+44) = TWT(I+44) + TWT(I+59)                                 MTCA2930
  741 CONTINUE                                                          MTCA2940
      TWT(52) = TWT(52) + TWT(65)                                       MTCA2950
      TWT(40) = TWT(40) + TWT(60)                                       MTCA2960
      TWT(41) = TWT(41) + TWT(60)                                       MTCA2970
C                                                                       MTCA2980
C            ***SAVE SEC(I) DATA FOR NEXT SEC/PNL CALC.  DESIGN DATA***MTCA2990
  750 DO 751 I=1,40                                                     MTCA3000
      TDC(I+120) = TDC(I+80)                                            MTCA3010
  751 CONTINUE                                                          MTCA3020
C                                                                       MTCA3030
C              *BOX SECTION COMPONENT AREAS*                            MTCA3040
      DO 752 I=1,24                                                     MTCA3050
      TWT(I+226) = TWT(I+120)                                           MTCA3060
  752 CONTINUE                                                          MTCA3070
C                                                                       MTCA3080
C              *FS/RS MISC SKIN AREAS*                                  MTCA3090
      TWT(198) = TWT(193)                                               MTCA3100
      TWT(199) = TWT(194)                                               MTCA3110
C                                                                       MTCA3120
C              *NX(UPR,LWR)*                                            MTCA3130
      TWT(170) = TDC(72)                                                MTCA3140
      TWT(169) = TDC(71)                                                MTCA3150
C                                                                       MTCA3160
C             **SEC(1-11) DELTA CONC WTS DUE TO JTS/BLHD FOR PRINT**    MTCA3170
C              *11 BLOCKS OF DATA, 11 CELLS/BLOCK   TC(220-340)*        MTCA3180
C              *WT/IN(TOTAL,TB,LE,TE,MISC,VF),CONC AT SEC.,OBD,IBD.*    MTCA3190
C              *PNLS(1-10), FTG WT, TOTAL DELTA WT IN PNL*              MTCA3200
C              *MOVE TWT(381-391)*                                      MTCA3210
      TWT(387) = TWT(387) + DLTBX*(DLCVU*TWT(187) + DLCVL*TWT(188) + TWTMTCA3220
     1(189) + T(  190) - TWT(191))                                      MTCA3230
      TWT(388) = TWT(221)                                               MTCA3250
      TWT(389) = TWT(215)                                               MTCA3260
      TWT(390) = TWT(108)                                               MTCA3270
      TWT(391) = TWT(391) + TWT(105)                                    MTCA3280
C                                                                       MTCA3340
C             **MOVE IBD DELTA JTS/BLHD TO OBD,  CLEAR IBD**            MTCA3350
      DO 754 I=1,6                                                      MTCA3360
      TWT(I+220) = TWT(I+214)                                           MTCA3370
      TWT(I+214) = DC(3)                                                MTCA3380
  754 CONTINUE                                                          MTCA3390
C                                                                       MTCA3400
C           ***SAVE REQD SECT/PNL DATA FOR DH/CG CALC-DEADH/WDDATA*** MTCA3410
C            **ALL WTS W/O DELTA WING**                                 MTCA3420
C             *1. WPNLS = BOX WT FOR ST ONLY X DELTA BOX FOR SCALING* MTCA3430
C             *2.  TPNLW = TOTAL DIST. WT. OF BOX FOR SCALING.  WIST) MTCA3440
C              + DWT FROM DLPNL, DELTA INPUT WT. (NO VF)*               MTCA3450
C             *3.  TBWPI = WT/IN FOR BOX W/O VF*                        MTCA3460
C             *4.  VFWPI = WT/IN FOR DELTA VF*                          MTCA3470
C             *5. TWWPI = WT/IN FOR WING MISC*                          MTCA3480
C             *6.  TBCWT = WT OF DELTA JTS/BLHD AT STATION X DEL(BOX)*MTCA3490
C             *7.  DNXI1 = NX(UPR) FOR BOX WT/IN SCALING-NEXT PASS*   MTCA3500
C             *8.  DEFFI = EFF. STRUCT. DEPTH FOR DW ITERATION*         MTCA3510
C                                                                       MTCA3520
C            **MOVE PNL DATA ON ISEC=2-11, SECT DATA ON ISEC=1-11**   MTCA3530
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CARD NO **** CONTENTS ****

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      TOMPI(N) = TWT(371) - TWT(380)                                   MTCA3540
      WFMPI(N) = TWT(380)                                              MTCA3550
      THMPI(N) = TWT(384)                                              MTCA3560
      TBCWT(N) = TWT(387)                                              MTCA3570
      DNXI(N) = TDC(72)                                                MTCA3580
      DEFFI(N) = TDC(73)                                               MTCA3590
C                                                                      MTCA3600
  798 IF (ND(2) - ISEC) 755,755,793                                    MTCA3610
  755 WPNLS(N) = TWT(97) - TWT(100)                                    MTCA3620
      TPNLW(N) = WPNLS(N) + DLTBX*(TWT(106) + TWT(107))                MTCA3630
C                                                                      MTCA3640
C                                                                      MTCA3750
C                                                                      MTCA8900
C           ***EXIT***                                                 MTCA8910
  799 RETURN                                                           MTCA8990
      END                                                              MTCA8999
C*********************************************************************
C
C        *****SUBROUTINE BHDJT*****
C   ***BULKHEAD AND JOINT WEIGHT EVALUATION***
C
C*********************************************************************
C
      SUBROUTINE BHDJT                                                 BHDJ0010
C                                                                      BHDJ0011
C        JOINT AND BLHD CALC. SUBR                                     BHDJ0020
C                                                                      BHDJ0030
C                                                                      BHDJ0040
C                                                                      BHDJ0110
C                                                                      BHDJ0130
      COMMON T(2060),D(2060),CD(2000),ND(100)                          BHDJ0140
C                                                                      BHDJ0150
      DIMENSION DC(100),TDC(200),TSC(420),TSS(100),TWT(400),TSEC(300), BHDJ0160
     1TT(24),DEL(30),                                                  BHDJ0161
     2DSPR(9),DBLO(11),DSPLI(8),                                       BHDJ0162
     3SLCFS(4),                                                        BHDJ0163
     9DSPLO(7)                                                         BHDJ0169
C                                                                      BHDJ0170
      EQUIVALENCE (TDC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961)),  BHDJ0180
     1(DC(1),D(1401)),(TWT(1),CD(1101)),(TSEC(1),CD(1501)),            BHDJ0181
     2(TT(1),T(1317)),(DEL(1),TWT(251)),                               BHDJ0182
     3(CJONT,TWT(201)),(CBLHD,TWT(200)),(CNSID,D(461)),(SKON,D(370)),  BHDJ0183
     4(DLRRC,DEL(22)),                                                 BHDJ0184
     5(SDRHO,TWT(175)),                                                BHDJ0185
     6(DLSKM,DEL(7)),(DBLAT,DEL(12)),(DLIRB,DEL(9)),(DLIRW,DEL(10)),   BHDJ0186
     7(DSPLO(1),D(58)),(DSPR(1),D(462)),(SLCFS(1),D(1470)),            BHDJ0187
     8(DBLO(1),D(1479)),(DSPLI(1),D(1490)),                            BHDJ0188
     9(IC,ND(48)),(ICB,ND(47)),(ISEC,ND(55))                           BHDJ0189
C                                                                      BHDJ0280
C             **CLEAR TT REGION**                                      BHDJ0290
  700 DO 7000 I=1,24                                                   BHDJ0300
      TT(I) = DC(3)                                                    BHDJ0310
 7000 CONTINUE                                                         BHDJ0320
C                                                                      BHDJ0330
C      *****SETUP SECTION CONSTANTS *****                              BHDJ0350
C       *** SETUP CALC.  TEST IC FOR TIP=1, AND RT-10 = 2.***          BHDJ0340
  701 TT(1) = TDC(77)*SDRHO                                            BHDJ0360
      TT(2) = TT(1)*DLSKM                                              BHDJ0370
      TT(3) = TT(1)*DBLAT                                              BHDJ0380
      TT(4) = TDC(77)*DBLAT                                            BHDJ0390
      TWT(202) = DC(3)                                                 BHDJ0400
      IF (CNSID - D(2)) 702,7010,702                                   BHDJ0410
 7010 TWT(202) = TDC(77)*(TSEC(229) + TSEC(225))*DSPR(9)               BHDJ0420
C                                                                      BHDJ0430
C             **CLEAR STORAGE.  TWT(185-197)**                         BHDJ0440
  702 DO 703 I=1,13                                                    BHDJ0450
      TWT(I+184) = DC(3)                                               BHDJ0460
      TWT(I+201) = DC(3)                                               BHDJ0470
  703 CONTINUE                                                         BHDJ0480
C                                                                      BHDJ0490
C                                                                      BHDJ0570
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CARD NO    ****                      CONTENTS                          ****

      C           ***** FS/WS MISC SKINS.  EQUAL T(SKIN), WITH MIN. AND MAX**BHDJ0580
       710  TT(8) = (SLCFS(1) + SLCFS(2))*DLSKN/D(2)                   BHDJ0590
            TMT(193) = TOC(88)*SLCFS(5)                                BHDJ0600
            TMT(194) = TOC(87)*SLCFS(5)                                BHDJ0610
            DO 7109 I=1,2                                              BHDJ0620
            IF (TMT(I+192) - SLCFS(3)) 7100,7100,7101                  BHDJ0630
       7100 TMT(I+192) = SLCFS(3)                                      BHDJ0640
       7101 TMT(I+192) = TMT(I+192) - TMT(I+149)                       BHDJ0650
            IF (TMT(I+192)) 7102,7102,7103                             BHDJ0660
       7102 TMT(I+192) = DC(3)                                         BHDJ0670
       7103 TMT(I+192) = TMT(I+192)*TT(8) + TT(8)/D(2 *SKMN            BHDJ0680
       7109 CONTINUE                                                   BHDJ0690
            TMT(194) = TMT(194)*TMT(165)                               BHDJ0700
      C                                                                BHDJ0710
      C                                                                BHDJ0720
      C           ***SECTION I-11 JOINT AND BLHD DATA AS REQD***       BHDJ0730
      C            **SETUP BASIC RIB BLHD. TT(9) = W(IRIB) FOR W/RIB ONLY** BHDJ0740
       711  TT(9) = DC(3)                                              BHDJ0750
            IF (CNSID) 7110,7110,7111                                  BHDJ0760
       7110 TT(9) = TT(1)*TDC(89)/D(24)*TDC(100)*DLIRB*DLIRH           BHDJ0770
      C                                                                BHDJ0890
      C      TEST FOR CALC.  ICB  1=JOINT,  2= NO JOINT                BHDJ0900
      C      SETUP TMT(192) AS BLHD  COEFT.                            BHDJ0910
       7111 ICB = ND(1)                                                BHDJ0920
            TMT(192) = ABS (CBLHD)                                     BHDJ0930
      C                                                                BHDJ0938
      C          *** TEST BLHD ***                                     BHDJ0940
            IF (CBLHD) 712,713,712                                     BHDJ0950
      C                                                                BHDJ0960
      C        **** DO BLHD.  TEST FOR JOINT ****                      BHDJ0970
       712  IF (CJONT) 717,716,717                                     BHDJ0980
      C                                                                BHDJ0990
      C            ***** BLHD=0.0  TEST FOR JOINT *****                BHDJ1000
       713  IF (CJONT) 717,714,715                                     BHDJ1010
      C                                                                BHDJ1020
      C       *** NO LOINT AND BLHD.  TEST FOR RT RIB **               BHDJ1030
       714  IF (ND(1)) - ISEC) 7140,7140,750                           BHDJ1040
       7140 IF (TMT(35)) 7141,750,7141                                 BHDJ1050
       7141 TMT(191) = TT(9)                                           BHDJ1060
            GO TO 7411                                                 BHDJ1070
      C                                                                BHDJ1080
      C       ***** BLHD = 0.0  DO JOINT.  TEST FOR RT RIB  *****      BHDJ1090
       715  IF (ND(1)) - ISEC) 7150,7150,730                           BHDJ1100
       7150 IF (TMT(35)) 730,730,7151                                  BHDJ1110
       7151 TMT(191) = TT(9)                                           BHDJ1115
            GO TO 730                                                  BHDJ1116
      C                                                                BHDJ1119
       716  ICB = ND(2)                                                BHDJ1120
       717  TMT(191) = TT(9)                                           BHDJ1125
      C                                                                BHDJ1130
      C       *** SETUP BLHD TWEB, TCAP ***                            BHDJ1140
       723  TT(5) = D(56)*TDC(107)                                     BHDJ1150
            TT(6) = D(57)*TMT(150)                                     BHDJ1160
            TT(7) = D(57)*TMT(151)*TMT(105)                            BHDJ1170
            IF (TT(5) - DBLO(1)) 724,724,7240                          BHDJ1180
       724  TT(5) = DBLO(1)                                            BHDJ1190
       7240 DO 7242 I=1,2                                              BHDJ1200
            IF (TT(I+5) - DBLO(2)) 7241,7241,7242                      BHDJ1210
       7241 TT(I+5) = DBLO(2)                                          BHDJ1220
       7242 CONTINUE                                                   BHDJ1230
      C                                                                BHDJ1240
      C       ***** CALC. BLHD WT. *****                               BHDJ1250
            TMT(190) = DBLO(3)*TT(5)*TDC(73) + DBLO(4)*(TT(6) + TT(7)) BHDJ1260
            TMT(190) = TT(9) + TMT(190)*TT(1)*DBLO(5)*TMT(192)         BHDJ1270
      C                                                                BHDJ1280
      C                                                                BHDJ1290
      C.                                                               BHDJ1300
      C     BLHD MISC. IF NO JOINT, ID WILL BE 2                       BHDJ1310
       7230 IF (ND(1) - ICB) 721,730,721                               BHDJ1320
      C                                                                BHDJ1330
      C              **** REVISE DELTA SKINS AT BLHD ****              BHDJ1340
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CARD NO  ****                          CONTENTS                              ****
         C                    SETUP L(REQD) AND T(REQD)                      BHOJ1350
          721  TT(10) = D(4)*DBLO(7) + D(27) + D(2)*TOC(107)                 BHOJ1360
               TT(11) = TT(10)*TT(2)*DBLO(1)                                 BHOJ1370
               TT(12) = (DBLO(6) + D(1))/DBLO(8)*TOC(72)/DBLO(6)/TOC(60)     BHOJ1380
         C                                                                   BHOJ1390
               DO 7219 I=1,2                                                 BHOJ1400
               THT(I+194) = DBLO(10)*THT(I+149)                              BHOJ1410
               IF (THT(I+194) - DBLO(9)) 7210,7210,7211                      BHOJ1420
          7210 THT(I+194) = DBLO(9)                                          BHOJ1430
          7211 IF (THT(I+194) - TT(12)) 7212,7212,7213                       BHOJ1440
          7212 THT(I+194) = TT(12)                                           BHOJ1450
          7213 TT(13) = TT(4)*D(54)/(DBLO(6) + D(1))*DBLO(7)                 BHOJ1460
               TT(14) = DSPLI(7)*DBLO(7)*DBLO(1)*DSPLO(3)*DSPLO(3)           BHOJ1470
               THT(197) = THT(197) + TT(13)*(TT(14) + (THT(I+194) + TOC(107) + TOBHOJ1480
              IC(107))*(DSPLI(7) - SDRHO))                                   BHOJ1490
               THT(I+194) = TT(1).*(THT(I+194) - THT(I+149))/D(2)            BHOJ1500
          7219 CONTINUE                                                      BHOJ1510
               THT(196) = THT(196)*THT(165)                                  BHOJ1520
               THT(197) = THT(197)/D(2)                                      BHOJ1530
               GO TO 740                                                     BHOJ1540
         C                                                                   BHOJ1550
         C                                                                   BHOJ1560
         C                                                                   BHOJ1570
         C         *** SPLICE WT DATA - LB FOR ONE SIDE ONLY. ***            BHOJ1580
          730  THT(203) = DSPLI(1)                                           BHOJ1590
               TT(15) = DSPLI(2) + D(1)                                      BHOJ1600
         C                                                                   BHOJ1610
               TT(16) = TOC(72)*TT(15)                                       BHOJ1620
         C                                                                   BHOJ1630
         C         ****CALC D(BOLT) REQD   TEST WITH MIN AND MAX D ****      BHOJ1640
               IF (THT(203)) 7300,7300,731                                   BHOJ1650
          7300 THT(203) = DSPLI(5)*DSPLI(6)*D(54)                            BHOJ1660
               THT(203) = TT(16)/THT(203)                                    BHOJ1670
               IF (DSPLO(1) - THT(203)) 7301,7301,7303                       BHOJ1680
          7301 IF (DSPLO(2) - THT(203)) 7302,7302,731                        BHOJ1690
          7302 THT(203) = DSPLO(2)                                           BHOJ1700
               GO TO 731                                                     BHOJ1710
         C                                                                   BHOJ1720
         C         **** SETUP T(REQD), TENSION OR BEARING ****               BHOJ1730
          7303 THT(203) = DSPLO(1)                                           BHOJ1740
          731  TT(17) = DSPLI(8)*THT(203)                                    BHOJ1750
               IF (TT(17) - ABS(CJONT)) 7310,7310,7311                       BHOJ1760
          7310 TT(17) = ABS(CJONT)                                           BHOJ1765
          7311 TT(16) = TT(16)*THT(203)                                      BHOJ1770
         C                                                                   BHOJ1778
         C                **FTMAX AND FBRMAX**                               BHOJ1779
               TT(18) = THT(167)                                             BHOJ1780
               TT(19) = THT(168)                                             BHOJ1790
         C                                                                   BHOJ1798
         C                *TREQD(TEN), TREQD(BRG)*                           BHOJ1799
               TT(20) = TT(16)/(TT(18)*THT(203)*DSPLI(2))                    BHOJ1800
               TT(21) = TT(16)/TT(19)/THT(203)                               BHOJ1810
         C                                                                   BHOJ1818
         C                **USE LARGER T.  TEST WITH T(MIN)**                BHOJ1819
               THT(204) = TT(20)                                             BHOJ1820
               IF (TT(20) - TT(21)) 7323,7323,7324                           BHOJ1830
          7323 THT(204) = TT(21)                                             BHOJ1840
          7324 IF (THT(204) - DSPLO(4)) 7325,7325,7326                       BHOJ1850
          7325 THT(204) = DSPLO(4)                                           BHOJ1860
         C                                                                   BHOJ1870
         C                **BOLT AREA/INCH**                                 BHOJ1880
          7326 TT(22) = D(54)*THT(203)/TT(15)                                BHOJ1890
         C                                                                   BHOJ1900
         C                                                                   BHOJ1910
         C                                                                   BHOJ1920
         C          **** DO DELTA SKINS ***                                  BHOJ1930
         C                                                                   BHOJ1940
         C            **** SETUP SKIN CALC. DATA ****                        BHOJ1950
               TT(24) = TT(17)*DSPLO(6)*TT(2)                                BHOJ1960
               TT(23) = TT(24) - TT(2)*TT(22)                                BHOJ1970
         C                                                                   BHOJ1980
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CARD NO **** CONTENTS ****

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C                                                                      BHOJ1990
  733 DO 7339 I=1,2                                                    BHOJ2000
      TWT(I+204) = TWT(I+149)*DSPLO(5)                                 BHOJ2010
      IF (TWT(I+204) - TWT(204)) 7330,7330,7331                        BHOJ2020
 7330 TWT(I+204) = TWT(204)                                            BHOJ2030
 7331 TWT(I+194) = TT(23)*TWT(I+204)                                   BHOJ2040
C                                                                      BHOJ2050
C                                                                      BHOJ2060
C         **** SAVE COVER PLATE AND CAP DATA ***                       BHOJ2070
      TWT(I+206) = TWT(I+194)/D(2)                                     BHOJ2080
      TWT(I+194) = TWT(I+194) - TT(24)*TWT(I+149)                      BHOJ2090
 7339 CONTINUE                                                         BHOJ2100
      TWT(196) = TWT(196)*TWT(165)                                     BHOJ2110
C                                                                      BHOJ2120
C        *** DO BOLT WEIGHT ***                                        BHOJ2130
      TWT(197) = (TWT(205) + TWT(206) + (TWT(203)*DSPLO(3)/D(19)*DSPLO(3BHOJ2140
     1)*DSPLO(6)))/D(19)                                               BHOJ2150
      TWT(197) = TT(4)*TWT(197)*DSPLI(7)+TT(22)                        BHOJ2160
                                                                       BHOJ2170
C                                                                      BHOJ2180
C                                                                      BHOJ2190
C                                                                      BHOJ2200
C       *** SETUP WT. ALLOCATIONS.  TEST ID ***                        BHOJ2210
  733 TWT(209) = TWT(207) + TWT(208)                                   BHOJ2220
      TWT(210) = TWT(207)                                              BHOJ2225
      TWT(211) = TWT(208)                                              BHOJ2226
      IF (DSPLI(5) - D(2)) 7350,7351,7351                              BHOJ2230
 7350 TWT(210) = DC(3)                                                 BHOJ2240
      TWT(211) = DC(3)                                                 BHOJ2250
      TWT(209) = TWT(209)*D(2)                                         BHOJ2260
C                                                                      BHOJ2270
C         ***** TEST FOR ROOT RIB *****                                BHOJ2280
 7351 IF (ND(1) - ISEC) 7352,7352,736                                  BHOJ2290
 7352 TWT(195) = TWT(195) + TWT(207)                                   BHOJ2300
      TWT(198) = TWT(198) + TWT(208)                                   BHOJ2310
      IF (CJONT) 7354,7353,7353                                        BHOJ2320
C                                                                      BHOJ2329
C          *** BASIC OPNL TYPE. 2*CAP ***                              BHOJ2330
 7353 TWT(209) = TWT(209)*D(2)                                         BHOJ2340
 7354 IF (TWT(36)*OLRRC - TWT(209)) 7355,741,741                       BHOJ2350
 7355 TWT(35) = TWT(35) - TWT(36)*OLRRC + TWT(209)                     BHOJ2360
      TWT(36) = TWT(209)                                               BHOJ2370
      GO TO 741                                                        BHOJ2380
C                                                                      BHOJ2390
C       **** SEC. 2 TO TIP.  TEST FOR TIP ****                         BHOJ2400
  736 TWT(163) = D(2)                                                  BHOJ2410
      IF (ND(2) - ISEC) 7360,7360,737                                  BHOJ2420
C                                                                      BHOJ2429
C             ** SECTION 2 TO 10 **                                    BHOJ2430
 7360 TWT(184) = D(1)                                                  BHOJ2440
 7361 TWT(190) = TWT(190) + TWT(209)*D(2)                              BHOJ2450
 7352 TWT(195) = TWT(195) + TWT(210)                                   BHOJ2460
      TWT(198) = TWT(198) + TWT(211)                                   BHOJ2470
      GO TO 750                                                        BHOJ2480
C                                                                      BHOJ2490
C       ***** TIP SECTION *****                                        BHOJ2500
  737 TWT(184) = D(19)                                                 BHOJ2510
      IF (CJONT) 7370,7361,7361                                        BHOJ2520
 7370 TWT(197) = DC(3)                                                 BHOJ2530
      TWT(183) = D(1)                                                  BHOJ2540
      GO TO 7362                                                       BHOJ2550
C                                                                      BHOJ2560
C       ***** SETUP WLID TYPE WT. ALLOCATIONS *****                    BHOJ2570
  740 TWT(163) = D(2)                                                  BHOJ2580
      TWT(184) = D(1)                                                  BHOJ2590
C                                                                      BHOJ2600
C       *** TEST FOR ROOT RIB OR TIP RIB ***                           BHOJ2610
      IF (ND(2) - ISEC) 7400,750,742                                   BHOJ2620
C                                                                      BHOJ2629
C                    TEST FOR RT RIB                                   BHOJ2630
 7400 IF (ND(1) - ISEC) 741,741,750                                    BHOJ2640
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CARD NO	**** CONTENTS ****	
5041	C	BHDJ2649
5042	C *** ROOT RIB TEST FOR OPNL OR C SEC TYPE ***	BHDJ2650
5043	741 IF (CBLHD) 7410,7413,7413	BHDJ2660
5044	C	BHDJ2669
5045	C ** C-SEC TYPE **	BHDJ2670
5046	7410 TWT(190) = TWT(190)*D(19)	BHDJ2680
5047	7411 TWT(163) = D(1)	BHDJ2690
5048	7412 TWT(164) = D(19)	BHDJ2700
5049	GO TO 750	BHDJ2710
5050	C	BHDJ2719
5051	C ** OPNL TYPE **	BHDJ2720
5052	7413 TWT(197) = D(2)*TWT(197)	BHDJ2730
5053	GO TO 7411	BHDJ2740
5054	C	BHDJ2750
5055	C ***** TIP *****	BHDJ2760
5056	742 IF (CBLHD) 7420,7412,7412	BHDJ2770
5057	7420 TWT(197) = DC(3)	BHDJ2780
5058	GO TO 7410	BHDJ2790
5059	C	BHDJ2800
5060	C	BHDJ2810
5061	C	BHDJ2820
5062	C PROCESS PANEL(1) MISC SK..RT (CHORDWISE) AND BLKHDS	BHDJ2830
5063	750 TWT(187)= TWT(195)*TWT(163)	BHDJ2840
5064	TWT(188)= TWT(196)*TWT(163)	BHDJ2850
5065	TWT(189)= TWT(197)*TWT(163)	BHDJ2860
5066	TWT(191) = TWT(191)*TWT(164)	BHDJ2870
5067	C	BHDJ2880
5068	C	BHDJ2890
5069	C EXIT	BHDJ2900
5070	7599 RETURN	BHDJ2910
5071	END	BHDJ2920
5072	C**********	
5073	C	
5074	C *****SUBROUTINE RTRIB*****	
5075	C ***ROOT RIB AND SHEAR TIE WEIGHT EVALUATION***	
5076	C	
5077	C**********	
5078	C	
5079	SUBROUTINE RTRIB	RTRI0010
5080	C	RTRI0011
5081	C ***ROOT RIB AND FUSELAGE SHEAR TIE FIGS CALC SUBR***	RTRI0020
5082	C	RTRI0030
5083	C	RTRI0090
5084	C	RTRI0110
5085	COMMON T(2060),D(2060),CD(20001),ND(100)	RTRI0120
5086	C	RTRI0130
5087	DIMENSION DC(100),TDC(200),TSC(420),TSS(100),TWT(400),TSEC(300),	RTRI0140
5088	1TT(24),	RTRI0141
5089	2DEL(30),	RTRI0142
5090	3DBLO(11),DSPR(9),	RTRI0143
5091	9DSTIE(8)	RTRI0149
5092	C	RTRI0150
5093	EQUIVALENCE (DC(1),D(1401)),(TDC(1),T(1361)),(TSC(1),T(1541)),	RTRI0160
5094	1(TSS(1),T(1961)),(TWT(1),CD(10001)),(TSEC(1),CD(15001)),	RTRI0161
5095	2(TT(1),T(1317)),(DEL(1),TWT(251)),(DELST,D(520)),	RTRI0162
5096	3(DELRA DEL(21)),(DLRRC,DEL(22)),(DLRRM,DEL(23)),(DLRRM,DEL(24)),	RTRI0163
5097	4(DSTIE(1),D(521)),(DBLO(1),D(479)),(DSPR(1),D(462)),	RTRI0164
5098	5(CNSID,D(461)),	RTRI0165
5099	6(DIAMR,D(69)),(SQRHO,TWT(175)),	RTRI0166
5100	9(COSEA,T(76)),(SINEA,T(75))	RTRI0169
5101	C	RTRI0170
5102	900 TT(10) = SQRHO*TDC(77)/COSEA	RTRI0300
5103	TT(11) = (TDC(88) + TDC(87))/D(2)	RTRI0310
5104	IF (TT(11) - DBLO(2)) 9000,9001,9001	RTRI0311
5105	9000 TT(11) = DBLO(2)	RTRI0312
5106	9001 TT(11) = TT(11)*D(401)/D(19)*DBLO(4)	RTRI0313
5107	C	RTRI0319
5108	TT(13) = (TDC(180) + TDC(187))/D(2)	RTRI0320
5109	IF (TT(13) - DBLO(1)) 901,902,902	RTRI0330
5110	901 TT(13) = DBLO(1)	RTRI0340
5111	902 TT(12) = DBLO(3)*TDC(73)*TT(13)	RTRI0350

CARD NO **** CONTENTS ****

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C                                                                  RTR10350
C           ***CAPS, WEBS, MISC***                                 RTR10359
      TWT(36) = TT(11)*TT(10)                                      RTR10360
      TWT(37) = TT(12)*TT(10)                                      RTR10370
      TWT(38) = (DKMRR - D(1))*(TWT(36) + TWT(37))                 RTR10380
C                                                                  RTR10390
C            **TEST FOR INSERTS**                                  RTR10400
      TT(14) = DC(3)                                               RTR10410
      TT(15) = DC(3)                                               RTR10420
      IF (CNSID - D(2)) 920,910,920                                RTR10430
C                                                                  RTR10440
C          ***HC PNL.  CALC INSERTS***                             RTR10450
  910 TT(14) = DSPR(7)*DSPR(8)/SDRHO                               RTR10460
      IF (TT(14)) 911,911,912                                      RTR10470
  911 TT(14) = D(2)*DSPR(4)                                        RTR10480
  912 TT(15) = TT(14)*TT(10)*(DSPR(1) + DSPR(5))                   RTR10490
C                                                                  RTR10500
C          ***APPLY WT. COEFF.                                     RTR10510
C              *DELTA CAP NOT APPLIED TO INSETS*                   RTR10520
C              *DELTA RT RIB APPLIED TO ALL*                       RTR10530
C              *SUM MISC INTO BOX MISC*                            RTR10540
  920 TWT(36) = TWT(36)*DLRRC + TT(15)                             RTR10550
      TWT(37) = TWT(37)*DLRRW                                      RTR10560
      TWT(38) = TWT(38)*DLRRM                                      RTR10570
      TWT(35) = DELRR*(TWT(36) + TWT(37) + TWT(38))                RTR10580
C                                                                  RTR10590
C                                                                  RTR10600
C      ****TEST FOR DELTA SHEAR TIE CALC.****                      RTR10610
C              *SETUP STRESS AND DENSITY FOR STATISTICAL WT SCALING*  RTR10611
C              *FTMAX, FSMAX, FBRMAX AND RHO*                      RTR10612
C              *IF DATA = 0, USE COVER MATL MAX VALUES*            RTR10613
C              *INPUT= STRESS OR FRACTION OF MAX VALUES*           RTR10614
      IF (DELST) 999,999,960                                       RTR10620
C                                                                  RTR10630
  960 TT(1) = ABS(TSEC(22)/D(2) + TSEC(11)*SINEA/TSEC(55)*COSEA)   RTR10640
      TT(2) = TT(1)*(DSTIE(6)/TSEC(267) + DSTIE(7)/TSEC(268) + DSTIE(8))RTR10650
      TWT(39) = TT(2)*DELST                                        RTR10660
      TWT(35) = TWT(35) + TWT(39)                                  RTR10670
C                                                                  RTR10680
C                                                                  RTR19900
C         ***EXIT***                                               RTR19910
  999 RETURN                                                       RTR19990
      END                                                          RTR19999
C*********************************************************************
C
C       *****SUBROUTINE WTPIN*****
C   ***SECTION WEIGHT PER INCH EVALUATION***
C
C*********************************************************************
C
      SUBROUTINE WTPIN                                             WTP10010
C                                                                  WTP10011
C        WT/IN CALC. SUBR                                          WTP10020
C                                                                  WTP10030
C                                                                  WTP10050
C               WT/IN= RHO*WIDTH*T(I)*DEL(I)  SUM WT*DELC(J)       WTP10060
C       DEL(I), DELC(J), DELW(K) NOT APPLIED TO DELTA WF           WTP10070
C                                                                  WTP10080
C                                                                  WTP10100
      COMMON TCOM(7120)                                            WTP10110
C                                                                  WTP10120
      DIMENSION T(2060),D(2060),CD(2000),ND(100),TW(900),          WTP10130
     1DC(100),TDC(200),TSC(420),TSS(100),TWT(460),TSEC(300),       WTP10131
     8DEL(30),                                                     WTP10132
     9GWORS(2),                                                    WTP10135
     8WPILE(11),WPITE(11)                                          WTP10138
C                                                                  WTP10140
      EQUIVALENCE (T(1),TCOM(1)),(D(1),TCOM(2061)),(CD(1),TCOM(4121)), WTP10150
     1(ND(1),TCOM(6121)),(TW(1),TCOM(6221)),(DC(1),D(1401)),       WTP10151
     2(TDC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961)),          WTP10152
     3(TWT(1),CD(1101)),(TSEC(1),CD(1501)),                        WTP10153
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CARD NO **** CONTENTS ****

```
     4(SDRHO,THT(175)),                                                 MTP10154
     5(SHKMS(1),D(410)),                                                MTP10155
     6(WPILE(1),T(263)),(WPITE(1),T(274)),                              MTP10156
     7(DEL(1),THT(251)),(DELLE,T(189)),(DELTE,T(190)),                  MTP10157
     8(DELWG,T(187)),(DLTBX,T(188)),(DMISC,T(191)),                     MTP10158
     9(ISEC,ND(55)),(N,ND(31)),(J,ND(20))                               MTP10159
C                                                                       MTP10160
C                                                                       MTP10170
C                                                                       MTP10230
C      COMPUTE WT/IN OF ELEMENTS AT SECTION(I)                          MTP10240
C      CLEAR THT(331)-THT(400)                                          MTP10250
  100 DO 101 I=1,70                                                     MTP10260
      THT(I+330)=DC(3)                                                  MTP10270
  101 CONTINUE                                                          MTP10280
C                                                                       MTP10290
C                                                                       MTP10300
C       BASIC BOX WT/IN  THT(121-144)                                   MTP10310
      DO 102 I=1,24                                                     MTP10320
      THT(I+330)=THT(I+120)*SDRHO                                       MTP10330
  102 CONTINUE                                                          MTP10340
C                                                                       MTP10350
C      LE, TE DATA, SUM LE,TE,                                          MTP10360
      N = ND(12) - ISEC                                                 MTP10370
      THT(383) = WPILE(N)*DELLE                                         MTP10380
      THT(384) = WPITE(N)*DELTE                                         MTP10390
C                                                                       MTP10400
C                 MOVE JTS/BLHD DATA                                    MTP10410
      DO 103 I=1,5                                                      MTP10420
      THT(I+374) = THT(I+188)                                           MTP10430
  103 CONTINUE                                                          MTP10440
C                                                                       MTP10450
C                *SETUP BOX DATA*                                       MTP10460
C                *RIB, RIB MISC*                                        MTP10470
  110 THT(333) = THT(333)*DEL(10)*DEL(9)                                MTP10480
      THT(357) = THT(339)                                               MTP10490
C                                                                       MTP10500
C                *SET UP VF DELTA ATT U.L. SUM VF*                      MTP10510
  120 THT(339) = THT(353) + THT(354)                                    MTP10520
C                                                                       MTP10530
      DO 121 I=1,5                                                      MTP10540
      THT(380) = THT(380) + THT(I+338) + THT(I+347)                     MTP10550
  121 CONTINUE                                                          MTP10560
C                                                                       MTP10570
C                *RESET HSKIN AT FS/RS*                                 MTP10580
      THT(353) = SDRHO*THT(193)                                         MTP10590
      THT(354) = SDRHO*THT(194)                                         MTP10600
C                                                                       MTP10610
C                                                                       MTP10620
C                                                                       MTP10630
C                                                                       MTP10640
C                                                                       MTP10650
C      FS, RS DATA IN LOOP N=1,2 J=1,5  INCL.SUM.-- SETUP THEB(0)FS,RS MTP10660
  130 THT(399)=TDC(180)                                                 MTP10670
      DO 131 N=1,2                                                      MTP10680
      J=N*ND(4)-ND(3)                                                   MTP10690
      THT(400) = THT(N+343)/SHKMS(N)                                    MTP10700
      THT(N+354)=(THT(N+343)-THT(400))*DEL(J+15)                        MTP10710
      THT(N+343)=(THT(400)-THT(N+345))*THT(N+151)/THT(399)              MTP10720
      THT(N+345)=THT(N+345)*DEL(J+ 3)                                   MTP10730
      THT(N+360)=DEL(J+12)*(THT(N+343)+THT(N+345))                      MTP10740
      THT(399)= TDC(187)                                                MTP10750
  131 CONTINUE                                                          MTP10760
C                                                                       MTP10770
C      SUM COVERS, SUM BOX ELEMENT     I=1,2  THT(399)=DEL(COVU,COVL) MTP10780
  140 THT(399)=DEL(I)                                                   MTP10790
      DO 141 I=1,2                                                      MTP10800
      THT(371)=THT(371)+THT(I+360)                                      MTP10810
      THT(I+360)=THT(I+360)+THT(I+347)                                  MTP10820
      THT(I+357)= THT(399)*(THT(I+330)+THT(I+333)+THT(I+335)+THT(I+352))MTP10830
      THT(371)=THT(371)+THT(I+357)                                      MTP10840
      THT(I+357)=THT(I+357)+THT(I+339)+THT(I+341)+THT(I+350)            MTP10850
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CARD NO    ****                          CONTENTS                          ****
  5254          TWT(399)=DEL(4)                                          WTP10860
  5255      141 CONTINUE                                                 WTP10870
  5256        C                                                          TP10880
  5257        C     SUM PIPS, MISC ATT                                   WTP10890
  5258      150 TWT(360)=TWT(333)+TWT(350)                               WTP10900
  5259          TWT(374)=TWT(338)+TWT(355)+TWT(356)+TWT(357)             WTP10910
  5260          TWT(371)=TWT(371)+TWT(333)+TWT(374)                      WTP10920
  5261          TWT(374)=TWT(374)+TWT(339)                               WTP10930
  5262        C                                                          WTP10940
  5263        C     SUM TB*DEL(TB) + SUM VF                              WTP10950
  5264      160 TWT(371) = TWT(371)*DLTBX + TWT(380)                     WTP10960
  5265        C                                                          WTP10970
  5266        C                                                          WTP10980
  5267        C     TOTALS                                               WTP10990
  5268      161 TWT(382) = TWT(371)                                      WTP11000
  5269          TWT(386) = TWT(380)                                      WTP11010
  5270          TWT(381) = TWT(382) + TWT(383) + TWT(384)                WTP11020
  5271          TWT(385) = DMISC*TWT(381)                                WTP11030
  5272          TWT(381) = DELWD*(TWT(381) + TWT(385))                   WTP11040
  5273        C                                                          WTP11050
  5274        C           **SAVE WT/IN DATA BLOCK FOR C-SEC, DELTA PIVOT CALC**  WTP11060
  5275        C            *11 SETS OF 50 PIECES OF DATA--TWT(331-380)** WTP11070
  5276        C            *STORED TIP-RT IN TW(1-550)*                  WTP11080
  5277      200 J = ISEC*50 - 50                                         WTP11090
  5278          DO 201 I=1,50                                            WTP11100
  5279          J = J + ND(1)                                            WTP11110
  5280          TW(J) = TWT(I+330)                                       WTP11120
  5281      201 CONTINUE                                                 WTP11130
  5282        C                                                          WTP11140
  5283        C                                                          WTP19000
  5284        C           **EXIT**                                       WTP19010
  5285      299 RETURN                                                   WTP19990
  5286          END                                                      WTP19999
  5287        C***********************************************************************
  5288        C
  5289        C       *****SUBROUTINE C03P*****
  5290        C   ***PARABOLIC CURVE FIT AND EVALUATION***
  5291        C
  5292        C***********************************************************************
  5293        C
  5294          SUBROUTINE C03P (XX,ZZ)                                  C03P0010
  5295        C     L.O. 3-POINT FLT SUBROUTINE -- FINDS MIN OR INTERPOLATES FOR  C03P0020
  5296        C    REVISION -- 01-07-66 -- NEW FORMAT FOR STR-PIVOT-- REVISE LINK  C03P0030
  5297        C                                                          C03P0040
  5298        C    X AT Y=1                                              C03P0050
  5299        C                                                          C03P0060
  5300        C     IK=ND(39)= TYPE ID                                   C03P0070
  5301        C     IL=ND(40)= MIN. TYPE                                 C03P0080
  5302        C     IL=1, LEFT,  IL=2, MIN,  IL=3, RIGHT                 C03P0090
  5303        C                                                          C03P0100
  5304          COMMON T(2060),D(2060),CD(2000),ND(100)                  C03P0120
  5305        C                                                          C03P0130
  5306          DIMENSION                                                C03P0140
  5307         1TDC(200),TSC(420),TSS(1),                                C03P0150
  5308         2CX(3),CZ(3),XX(3),ZZ(3),CF(9),CC(3)                      C03P0160
  5309        C                                                          C03P0170
  5310          EQUIVALENCE (TDC(1),T(1334)),(TSC(1),T(1594)),(TSS(1),T(1861)),  C03P0180
  5311         1(CX1,T(1387)),(CX(1),T(1323)),(CZ(1),T(1326)),(CC(1),T(1329)),  C03P0181
  5312         2(CF(1),T(1332))                                          C03P0182
  5313          EQUIVALENCE (IL,ND(40)),(IK,ND(39)),(NDI,ND(1)),(NDCT,ND(58))  C03P0190
  5314        C    MOVE DATA                                             C03P0230
  5315       90   DO 40 I=NDI,3                                          C03P0240
  5316          CX(I) = XX(I)                                            C03P0250
  5317       40   CZ(I) = ZZ(I)                                          C03P0260
  5318        C    FIT CURVE, COMPUTE CONSTANTS A,B,C                    C03P0280
  5319          DO 10 I=NDI,2                                            C03P0290
  5320          CF(I+3) = CX(I)-CX(I+1)                                  C03P0300
  5321       10   CF(I+6) = CX(I)+CX(I+1)                                C03P0310
  5322          CF(8) = CX(2)-CX(3)                                      C03P0330
  5323          CF(9) = CX(2)+CX(3)                                      C03P0340
  5324        C     COMPUTE L,M,N  A,B,C                                 C03P0350
```

CARD NO	**** CONTENTS ****	
5325	CF(1) = CZ(1)/(CF(4)*CF(5))	CG3P0360
5326	CF(2) = CZ(2)/(CF(6)*CF(4))	CG3P0370
5327	CF(3) = CZ(3)/(CF(6)*CF(5))	CG3P0380
5328	CC(1) = CF(1)-CF(2)+CF(3)	CG3P0390
5329	CC(2) = CF(2)*CF(8) - CF(1)*CF(9) - CF(3)*CF(7)	CG3P0400
5330	CC(3) = CZ(1)- (CX(1)*(CC(1)*CX(1)+CC(2)))	CG3P0410
5331	C TEST FOR TYPE OF EVALUATION 1= MIN, 2= EVAL X AT Y=1	CG3P0420
5332	C	CG3P0430
5333	IF (IK - ND(1)) 21,21,20	CG3P0440
5334	C EVAL X AT Z = 1.0 , TEST A,B	CG3P0450
5335	20 IF (CC(1)) 33,32,33	CG3P0460
5336	33 CX1 = (-CC(2) - SQRT (CC(2)*CC(2) - D(4)*CC(1)*(CC(3) - D(1)))*DCG3P0470	
5337	((1)/CC(1))	CG3P0480
5338	GO TO 30	CG3P0490
5339	C	CG3P0500
5340	C A IS ZERO	CG3P0510
5341	32 CX1 = (D(1) - CC(3))/CC(2)	CG3P0520
5342	GO TO 30	CG3P0530
5343	C ID=1.0 TEST FOR AND LOCATE MIN AND DIRECTION	CG3P0540
5344	C	CG3P0550
5345	21 IF (CC(1))25,22,25	CG3P0560
5346	C A IS NOT ZERO, TEST SIGN	CG3P0570
5347	25 IF (CC(1)) 29,26,26	CG3P0580
5348	29 IF (CZ(1) - CZ(3)) 24,24,28	CG3P0590
5349	C ID=-1.0 FOR EXTRAP LEFT	CG3P0600
5350	24 IL = ND(1)	CG3P0610
5351	IF (CZ(1) - CZ(3)) 30,30,28	CG3P0620
5352	C A IS 0.0, ST. LINE TEST B	CG3P0630
5353	22 IF (CC(2))23,24,23	CG3P0640
5354	C B IS NOT ZERO, TEST SIGN, 1.0= EXTRAP RIGHT	CG3P0650
5355	23 IL = ND(3)	CG3P0660
5356	IF (CC(2)) 30,24,24	CG3P0670
5357	C	CG3P0680
5358	C A IS POS, FIND MIN X	CG3P0690
5359	26 CX1= (-CC(2))/(CC(1)*D(2))	CG3P0700
5360	IL = ND(2)	CG3P0710
5361	IF (CX(1)-CX1) 27,30,24	CG3P0720
5362	27 IF(CX(3)-CX1) 28,30,30	CG3P0730
5363	28 IL = ND(3)	CG3P0740
5364	C	CG3P0750
5365	C EXIT	CG3P0770
5366	30 RETURN	CG3P0810
5367	END	CG3P0820
5368	C**********	
5369	C	
5370	C *****SUBRUUTINE SS*****	
5371	C ***STRESS-STRAIN CURVE EVALUATION AT GIVEN STRESS (FC)***	
5372	C	
5373	C**********	
5374	C	
5375	SUBROUTINE SS (SFC1)	SS 0010
5376	C STRESS-STRAIN EVAL. SUBR	SS 0020
5377	C	SS 0030
5378	C REVISION -- 01-10-66 -- NEW FORMAT	SS 0040
5379	C	SS 0050
5380	C STRAIN AND REDUCED MODULUS FOR GIVEN FC	SS 0060
5381	C	SS 0070
5382	COMMON T(20060),D(2060),CD(20000),ND(100)	SS 0110
5383	C	SS 0120
5384	DIMENSION	SS 0130
5385	1TDC(200),TSC(420),TSS(100),	SS 0140
5386	2SA(4),SD(7)	SS 0150
5387	C	SS 0160
5388	EQUIVALENCE (TDC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961)),	SS 0170
5389	1(SA(1),T(1377)),(SD(1),T(1392)),(SFC,T(1391)),(SC2,T(1322)),	SS 0171
5390	2(SC1,T(1321))	SS 0172
5391	C	SS 0200
5392	90 SFC = SFC1	SS 0090
5393	C	SS 0100
5394	SC1 = EXP (SD(2)*SFC)	SS 0210
5395	91 SC2= D(1)/SD(3)	SS 0220

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CARD NO  ****                          CONTENTS                          ****
 9388    C                                                                SS  0230
 9387    C     COMPUTE STRAIN, E1, E5                                     SS  0240
 9388          SA(1) = SFC*SC2 + SD(1)*SC1                                SS  0250
 9389          SA(3) = SFC/SA(1)                                          SS  0260
 9390     92   SA(2)= D(1)/( SC2  + SD(1)*SD(2)*SC1)                      SS  0270
 9391          SC1 = SA(2)/SA(3)                                          SS  0280
 9392    C                                                                SS  0290
 9393    C     ERSK AND KBOT                                              SS  0300
 9394     93   SA(8) = SA(3)*(D(41)+D(42)*(SQRT (D(43) + D(44)*SC1)))     SS  0310
 9395          SA(9) = SD(6)*SQRT (SA(8)/SFC)                             SS  0320
 9396    C     ERL1 AND ERL2                                              SS  0330
 9397          SA(4) = SQRT (SA(2)*SD(3))                                 SS  0340
 9398          SA(5) = SA(3)                                              SS  0350
 9399    C     ERG1 AND ERG2                                              SS  0360
 9410          SA(6) = SA(2)                                              SS  0370
 9411     94   SA(7) =  SA(3)*(D(45) + D(46)*SC1)                         SS  0380
 9412    C                                                                SS  0390
 9413     99   RETURN                                                     SS  0400
 9414          END                                                        SS  0410
 9415    C*************************************************************
 9416    C
 9417    C       *****SUBROUTINE PRTB*****
 9418    C   ***DESIGN DATA PRINT - TYPE B SECTION DESIGN DETAIL SUMMARY***
 9419    C
 9420    C*************************************************************
 9421    C
 9422          SUBROUTINE PRTB                                            PRTB0010
 9423    C                                                                PRTB0020
 9424    C            ***PRINT TYPE B--SYNTHESIS DETAILS***               PRTB0030
 9425    C                                                                PRTB0040
 9426    C                                                                PRTB0130
 9427    C                                                                PRTB0140
 9428    C                                                                PRTB0150
 9429    C                                                                PRTB0170
 9430          COMMON T(2000),D(2050),CD(2000),ND(100)                    PRTB0180
 9431          COMMON /MISC/ XMISC(100)                                   PRTB0181
 9432    C                                                                PRTB0190
 9433          DIMENSION DC(100),(DC(200),TSC(420),TSS(100),TWT(400),TSEC(300),  PRTB0200
 9434         1TOOM(3),DOM(3),                                            PRTB0201
 9435         9R(16)                                                      PRTB0209
 9436    C                                                                PRTB0210
 9437          EQUIVALENCE (DC(1),D(1401)),(TDC(1),T(1134)),(TSC(1),T(1534)),  PRTB0220
 9438         1(TSS(1),T(1961)),(TWT(1),CD(1101)),(TSEC(1),CD(1501)),     PRTB0221
 9439         2(R(1),XMISC(85)),                                          PRTB0222
 9440         3(TOOM(1),D(80)),(DOM(1),D(102)),                           PRTB0223
 9441         4(AC1D,D(430)),                                             PRTB0224
 9442         6(I,ND(20)),(J,ND(29)),(K,ND(30)),(N,ND(31)),               PRTB0226
 9443         7(IWFJT,ND(53)),(IWF,ND(51)),(IOP1,ND(82)),                 PRTB0227
 9444         8(NOOM,ND(56)),(IOM,ND(57)),(ISEC,ND(55 ),                  PRTB0228
 9445         9(NCASE,ND(60)),(NPAGE,ND(85))                              PRTB0229
 9446    C                                                                PRTB0230
 9447    C                                                                PRTB0240
 9448    C                                                                PRTB0310
 9449    C                                                                PRTB0320
 9450    C      TYPE B PAGE PRINT -- ID=1  SECTION DATA DETAIL STORAGE     PRTB0330
 9451    C      INDC ND = STORAGE LOC. REF.                               PRTB0340
 9452    C       BLOCK I--UPPER COVER, GENERAL DATA -- TDC REGION         PRTB0350
 9453    C                                                                PRTB0360
 9454     100  N=ND(12)-ISEC                                              PRTB0370
 9455          I=IOM                                                      PRTB0380
 9456          WRITE (6,101)NCASE,N,TOOM(I),DOM(I),IOM,NOOM,IOP1          PRTB0390
 9457     101  FORMAT (1H1,4HCASE14,10H SECTION I2,13H DATA.  TOOM=F8.1,8H  DOM=PRTB0400
             1F8.1,8H  IOM=I1,7H  NOOM=I1,7H  IOP1=I1,12X,13H** PRTB - IP()
 9458    C                                                                PRTB0410
 9460          IF(IOM - 2)501,505,501
 9461     501  WRITE(6,502)
 9462     502  FORMAT(1H+,103X,8H(2) **)
 9463          GO TO 510
 9464     505  WRITE(6,506)
 9465     506  FORMAT(1H+,103X,8H(1) **)
 9466    C
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CARD NO  ****                          CONTENTS                          ****
 9467    C                    **CASE TITLE**                              PRTB0410
 9468      510 WRITE (6,102)(R(I),I=1,16)
 9469      102 FORMAT(1HO,8A10/1H ,8A10/)
 9470    C                                                                PRTB0420
 9471          WRITE (6,103)                                              PRTB0430
 9472      103 FORMAT (48H  TDC     ***-UPPER COVER AND GENERAL DATA-***-) PRTB0435
 9473    C                                                                PRTB0439
 9474    C       TDC(60 TO 115)= 8 LINES X 6 = 54 CELLS -- LINES 4 - 11   PRTB0440
 9475      104 FORMAT (2X,I3,7E15.7)                                      PRTB0450
 9476    C                                                                PRTB0460
 9477          DO 105 N=60,110,7                                          PRTB0470
 9478          J=N+ND(6)                                                  PRTB0480
 9479          WRITE            (6,104)N,(TDC(I),I=N,J,1)                 PRTB0490
 9480      105 CONTINUE                                                   PRTB0500
 9481    C                                                                PRTB0507
 9482    C             **BLOCK 1-A FOR ADV. COMP  ONLY**                  PRTB0508
 9483    C              *PRINT LAMINATE DATA FROM TDC(121-139)*           PRTB0509
 9484          IF (ACID) 109,109,106                                      PRTB0510
 9485      106 DO 107 N=121,135,7                                         PRTB0511
 9486          J = N + ND(6)                                              PRTB0512
 9487          WRITE (6,104)N,(TDC(I),I=N,J,1)                            PRTB0513
 9488      107 CONTINUE                                                   PRTB0514
 9489    C                                                                PRTB0519
 9490    C       BLOCK 2 -- LOWER COVER, FRONT AND REAR SPAR DATA -- TDC REGION PRTB0520
 9491      109 WRITE (6,110)                                              PRTB0530
 9492      110 FORMAT  (54HO TDC    ***-LOWER COVER, FRONT AND REAR SPAR DATA-***-PRTB0540
                )                                                        PRTB0550
 9494    C                                                                PRTB0560
 9495    C      TDC(161-202)=7 LINES*6 =42 CELLS -- LINES 15-21           PRTB0570
 9496    C                                                                PRTB0580
 9497          DO 111 N=161,196,7                                         PRTB0590
 9498          J=N+ND(6)                                                  PRTB0600
 9499          WRITE            (6,104)N,(TDC(I),I=N,J,1)                 PRTB0610
 9500      111 CONTINUE                                                   PRTB0620
 9501    C                                                                PRTB0630
 9502    C                                                                PRTB0631
 9503    C            ***TEST FOR COMPOSITE DESIGN--SKIP FOLLOWING BLOCKS IF PRTB0632
 9504    C              *COMPOSITE DESIGN*                                PRTB0633
 9505          IF (ACID) 199,1200,199                                     PRTB0635
 9506    C                                                                PRTB0639
 9507    C       BLOCK 3 -- STRUCT EI,GJ DATA -- TWT, TSS REGION          PRTB0640
 9508    C      DATA STORED IN CD(1837-1872)                              PRTB0650
 9509     1200 WRITE (6,120)                                             PRTB0660
 9510      120 FORMAT (42H0 TWT     ***-STRUCTURAL EI, GJ DATA-***-  )    PRTB0670
 9511    C                                                                PRTB0680
 9512    C                                                                PRTB0690
 9513    C      TWT(282-299)= 3 LINES X6=18 CELLS -- LINES 24,25,26       PRTB0700
 9514          N=282                                                      PRTB0710
 9515          DO 121 K=1855,1867,7                                       PRTB0720
 9516          J=K+ND(6)                                                  PRTB0730
 9517          WRITE            (6,104)N,(CD(I),I=K,J,1)                  PRTB0740
 9518          N=N+ND(7)                                                  PRTB0750
 9519      121 CONTINUE                                                   PRTB0760
 9520    C      TSS(7-25) = 3 LINES X 6=18 CELLS -- LINES  28,29,30       PRTB0770
 9521          WRITE            (6,123)                                   PRTB0780
 9522      123 FORMAT (8H  TSS )                                          PRTB0790
 9523    C                                                                PRTB0800
 9524          N=7                                                        PRTB0810
 9525          DO 122 K=1837,1849,7                                       PRTB0820
 9526          J=K+ND(6)                                                  PRTB0830
 9527          WRITE            (6,104)N,(CD(I),I=K,J,1)                  PRTB0840
 9528          N=N+ND(7)                                                  PRTB0850
 9529      122 CONTINUE                                                   PRTB0860
 9530    C                                                                PRTB0870
 9531    C       TEST FOR WF CALC. IWF=2.  NO CALC. IF IWF=1,3            PRTB0880
 9532    C                                                                PRTB0890
 9533          IF (ND(2) - IWF) 199,130,199                               PRTB0900
 9534    C                                                                PRTB0910
 9535    C      PRINT BLOCK 4 -- WF PENALTY DATA IN SECT.                 PRTB0920
 9536      130 IF (IWFJT - ND(2)) 142,143,142                             PRTB0930
 9537      142 WRITE            (6,131)                                   PRTB0940
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CARD NO  ****                          CONTENTS                          ****
   9538    131 FORMAT (48H  TSC     ***-DELTA W DATA -- J COMPARISON-***-)  PRTB0950
   9539    141 FORMAT (49H  TSC     ***-DELTA W DATA -- TWT COMPARISON-***-)PRTB0960
   9540        GO TO 139                                                   PRTB0970
   9541    C                                                               PRTB0980
   9542    143 WRITE           (6,141)                                     PRTB0990
   9543    C                                                               PRTB1000
   9544    C       TSC(35-77) W DATA -- 6 LINES                            PRTB1010
   9545    138 DO 133 N=36,71,7                                            PRTB1020
   9546        J=N+ND(6)                                                   PRTB1030
   9547        WRITE           (6,134)N,(TSC(I),I=N,J,1)                   PRTB1040
   9548    133 CONTINUE                                                    PRTB1050
   9549    C                                                               PRTB1060
   9550    C       TWT(55-86)  6 LINES X 7/LINE                            PRTB1070
   9551        WRITE           (6,136)                                     PRTB1080
   9552    136 FORMAT (8H  TWT )                                           PRTB1090
   9553        DO 135 N=55,90,7                                            PRTB1100
   9554        J=N+ND(6)                                                   PRTB1110
   9555        WRITE           (6,134)N,(TWT(I),I=N,J,1)                   PRTB1120
   9556    135 CONTINUE                                                    PRTB1130
   9557    C                                                               PRTB1140
   9558    C       TDC(116) TO TDC(120) -- 5 CELLS-FIXED                   PRTB1150
   9559        WRITE           (6,132)(TDC(I+115),I=1,5)                   PRTB1160
   9560    132 FORMAT (12H  TDC(116)  ,5F14.8)                             PRTB1170
   9561    C                                                               PRTB1180
   9562    C                                                               PRTB1190
   9563    C                                                               PRTB1200
   9564    C       EXIT                                                    PRTB1210
   9565    199 RETURN                                                      PRTB1220
   9566        END                                                         PRTB1230
   9567    C*************************************************************************
   9568    C
   9569    C       *****SUBROUTINE PRTC*****
   9570    C   ***DESIGN DATA PRINT - TYPE C SECTION WEIGHT DETAIL SUMMARY***
   9571    C
   9572    C*************************************************************************
   9573    C
   9574        SUBROUTINE PRTC                                             PRTC0010
   9575    C                                                               PRTC0020
   9576    C           ***TYPE C PRINT--WEIGHT ANALYSIS DETAILS***         PRTC0030
   9577    C                                                               PRTC0040
   9578    C                                                               PRTC0130
   9579    C                                                               PRTC0140
   9580    C                                                               PRTC0150
   9581    C                                                               PRTC0160
   9582    C                                                               PRTC0180
   9583        COMMON T(2060),D(2060),CD(2000),ND(100)                     PRTC0190
   9584        COMMON /MISC/ XMISC(100)                                    PRTC0191
   9585    C                                                               PRTC0200
   9586        DIMENSION DC(100),TDC(200),TSC(420),TWT(400),TSEC(300),     PRTC0210
   9587       1TT(24), TSS(100),                                           PRTC0211
   9588       2TOGM(3),DGM(3),                                             PRTC0212
   9589       9R(18)                                                       PRTC0219
   9590    C                                                               PRTC0220
   9591    C                                                               PRTC0230
   9592        EQUIVALENCE (DC(1),D(1401)),(TDC(1),T(1301)),(TSC(1),T(1501)),PRTC0240
   9593       1(TSS(1),T(1981)),(TWT(1),CD(1101)),(TSEC(1),CD(1501)),      PRTC0241
   9594       2(R(1),XMISC(85)),(TT(1),T(1317)),                           PRTC0242
   9595       3(TOGM(1),D(80)),(DGM(1),D(102)),                            PRTC0243
   9596       4(AC1D,D(1430)),                                             PRTC0244
   9597       6(I,ND(29)),(K,ND(30)),(N,ND(31)),                           PRTC0246
   9598       7(IOP),ND(82)),                                              PRTC0247
   9599       8(IGM,ND(57)),(NDGM,ND(56)),(IWF,ND(51)),(ISEC,ND(55)),      PRTC0248
   9600       9(NCASE,ND(60)),(NPAGE,ND(85))                               PRTC0249
   9601    C                                                               PRTC0320
   9602    C                                                               PRTC0330
   9603    C     TYPE C PAGE PRINT BLOCKS 1 TO 5---PANEL WEIGHT DATA --- ID=3 PRTC0340
   9604    C     BLOCK 1 -- PANEL GEOMETRY SUMMARY AND WEIGHT DATA REGION --TWT-XPRTC0350
   9605    C                                                               PRTC0360
   9606    C                                                               PRTC0370
   9607    300 I=IGM                                                       PRTC0380
   9608    C                                                               PRTC0390
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CARD NO **** CONTENTS ****

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C                                                                 PRTC0400
C                                                                 PRTC0410
  301  N=ND(12) - ISEC                                            PRTC0420
C                                                                 PRTC0430
      WRITE (6,302)NCASE,N,TOGW(I),DGW(I),IGW,NOCW,IOP1
C                                                                 PRTC0450
  302  FORMAT (1H1,4HCASEI4,8H  PANEL I2,13H DATA.  TOGW=F8.1,6H  DGW=F8.PRTC0460
     11,6H  IGW=I1,7H  NOCW=I1,7H  IOP1=I1,14X,13H** PRTC - IP))
C
      IF(IGW - 2)501,505,501
  501 WRITE(6,502)
  502 FORMAT(1H+,103X,6H32) **)
      GO TO 510
  505 WRITE(6,506)
  506 FORMAT(1H+,103X,6H31) **)
C                                                                 PRTC0471
  303 FORMAT(1H0,8A10/1H ,8A10/)
C                                                                 PRTC0490
C                 **CASE TITLE**                                  PRTC0500
  510 WRITE (6,303)(R(I),I=1,16)                                  PRTC0510
C                                                                 PRTC0520
C                                                                 PRTC0530
C           ***BLOCK 1--DETAIL WT SUMMARY DATA AT PANEL(I)***     PRTC0540
C             *TWT(1-72),(87-123),(145-153),(185-228)*            PRTC0550
C             *17 LINES X 9 WORDS*                                PRTC0560
  310  WRITE (6,311)                                              PRTC0570
  311  FORMAT (40H0  TWT      -**-DETAIL WEIGHT DATA-**-  )        PRTC0580
  312  FORMAT (3X,I3,9F11.4)                                      PRTC0590
C                                                                 PRTC0600
       DO 313 N=1,72,9                                            PRTC0610
       K = N + ND(8)                                              PRTC0620
       WRITE (6,312)N,(TWT(I),I=N,K,1)                            PRTC0630
  313  CONTINUE                                                   PRTC0640
       DO 314 N=87,123,9                                          PRTC0650
       K = N + ND(8)                                              PRTC0660
       WRITE (6,312)N,(TWT(I),I=N,K,1)                            PRTC0670
  314  CONTINUE                                                   PRTC0680
       N = 145                                                    PRTC0690
       WRITE (6,312)N,(TWT(I+144),I=1,9)                          PRTC0700
       DO 315 N=185,228,9                                         PRTC0710
       K = N + ND(8)                                              PRTC0720
       WRITE (6,312)N,(TWT(I),I=N,K,1)                            PRTC0730
  315  CONTINUE                                                   PRTC0740
C                                                                 PRTC0750
C           **BLOCK 2--WT/IN DATA AT SECTION(I)**                 PRTC0760
C             *TWT(331-393)--7 LINES X 9 WORDS*                   PRTC0770
  320  WRITE (6,321)                                              PRTC0780
  321  FORMAT (40H0  TWT      -**-SECTION WT/INCH DATA-**-)        PRTC0790
C                                                                 PRTC0800
       DO 322 N=331,393,9                                         PRTC0810
       K = N + ND(8)                                              PRTC0820
       WRITE (6,312)N,(TWT(I),I=N,K,1)                            PRTC0830
  322  CONTINUE                                                   PRTC0840
C                                                                 PRTC0850
C           ***BLOCK 3--BLHD/JOINTS DESIGN DATA***                PRTC0860
C             *TT(1-24)--3 LINES X 8 WORDS*                       PRTC0870
  330  WRITE (6,331)                                              PRTC0880
  331  FORMAT (40H0   TT      -**- JOINTS/BLHD DATA-**-   )        PRTC0890
  332  FORMAT (3X,I3,8F11.4)                                      PRTC0900
C                                                                 PRTC0910
       DO 333 N=1,24,8                                            PRTC0920
       K = N + ND(7)                                              PRTC0930
       WRITE (6,332)N,(TT(I),I=N,K,1)                             PRTC0940
  333  CONTINUE                                                   PRTC0950
C                                                                 PRTC0960
C                                                                 PRTC0961
C          ***TEST FOR ADV. COMPOSITES--SKIP BLOCK 4 IF ADV/COMP.*** PRTC0962
       IF (ACID) 399,340,399                                      PRTC0965
C                                                                 PRTC0968
C            **METAL DESIGN**                                     PRTC0969
C          ***BLOCK 4--COMPOSITE EI, GJ DATA***                   PRTC0970
```

```
CARD NO   ****                        CONTENTS                          ****
          C              *TWT(202-299), TSS(7-24)--6 LINES X 6 (E) FORMAT WORDS* PRTC0960
          C              *TEST IVF FOR PRINT.  PRINT ON 2 ONLY7 SKIP ON 1.3*     PRTC0930
           340 IF (IVF - ND(2)) 399,341,399                                      PRTC1000
           341 WRITE (6,342)                                                     PRTC1010
           342 FORMAT (40H   TWT       ---COMPOSITE EI-GJ DATA---)               PRTC1020
           343 FORMAT (1H 3X,I3,6E16.8)                                          PRTC1030
           344 FORMAT (6H   TSS)                                                 PRTC1040
               DO 345 N=202,299,6                                                PRTC1050
               K = N + ND(5)                                                     PRTC1060
               WRITE (6,343)N,(TWT(I),I=N,K,1)                                   PRTC1070
           345 CONTINUE                                                          PRTC1080
          C                                                                      PRTC1090
               WRITE (6,344)                                                     PRTC1100
               DO 346 N=7,24,6                                                   PRTC1110
               K = N + ND(5)                                                     PRTC1120
               WRITE (6,343)N,(TSS(I),I=N,K,1)                                   PRTC1130
           346 CONTINUE                                                          PRTC1140
          C                                                                      PRTC1150
          C                                                                      PRTC1600
          C                                                                      PRTC1610
          C       EXIT                                                           PRTC1620
           399 RETURN                                                            PRTC1630
               END                                                               PRTC1640
          C*********************************************************************
          C
          C       *****SUBROUTINE PRTBK*****
          C   ***DESIGN DATA PRINT - DETAIL SYNTHESIS SEARCH DATA***
          C
          C*********************************************************************
          C
               SUBROUTINE PRTBK                                                  PRTB0010
          C        ***DETAIL BK PT PRINT SUBR.  5-14-70.****                     PRTB0020
          C                                                                      PRTB0030
          C        ***PRINT ON ID AT D(575,576,577) AND BLOCKS ON IK, ND(39)***  PRTB0040
          C                                                                      PRTB0050
          C                                                                      PRTB0070
               COMMON T(2060),D(2060),CD(2000),ND(100)                           PRTB0080
               COMMON /IPRINT/ IP(80)                                            PRTB0081
          C                                                                      PRTB0090
               DIMENSION                                 DC(100),                PRTB0100
              1TDC(200),TSC(420),TSS(100),TWT(400),TSEC(300)                     PRTB0110
          C                                                                      PRTB0130
               EQUIVALENCE (TDC(1),T(1341)),(TSC(1),T(1541)),(TSS(1),T(1961))    PRTB0140
               EQUIVALENCE (DC(1),D(1401))                                       PRTB0150
               EQUIVALENCE (TWT(1),CD(1101)),(TSEC(1),CD(1501))                  PRTB0160
               EQUIVALENCE (IK,ND(39)),(ISEC,ND(55)),(I,ND(31)),(N,ND(30)),      PRTB0170
              1 (K,ND(29)), (IRGO,ND(28)), (NODW,ND(56))                         PRTB0171
          C                                                                      PRTB0180
               K = IRGO                                                          PRTB0220
          C
               N = D(578)
               IF (N - NODW) 199,104,199                                         PRTB0250
          C
           104 DO 106 I=1,3                                                      PRTB0255
               N = D(I+574)
               IF (ISEC - N) 106,110,106                                         PRTB0270
           106 CONTINUE                                                          PRTB0275
               GO TO 199                                                         PRTB0276
          C                                                                      PRTB0279
          C         ***PRINT ON ID=IK.***                                        PRTB0280
           110 IF (IK - ND(2)) 111,125,125                                       PRTB0290
          C                  BLOCK 1A                                            PRTB0300
           111 WRITE(6,112)ISEC,NODW,IK,    TSC(1),TSC(2),TSC(381),TSC(409),TDC(7PRTB0310
              12),TSC(385),TSS(57)                                               PRTB0320
           112 FORMAT(1H1,5X,6HISEC =,I3,5X,6HNODW =,I3,5X,4HIK =,I2,31X,
              1   38H** PRTBK (CALLED FROM TSCH) - IP(33) **//
              2    10X, 8HTSC(1)  ,F15.6/10X, 8HTSC(2)  ,F15.6/
              3    10X, 8HTSC(381),F15.6/10X, 8HTSC(409),F15.6/
              4    10X, 8HTDC(72) ,F15.6/10X, 8HTSC(385),F15.6/
              5    10X, 8HTSS(57) ,F15.6//)
               WRITE(6,1122) TSEC(248),TSEC(249),TSEC(250),TSEC(251),TSEC(221),  PRTB0334
```

CARD NO	**** CONTENTS ****	
9751	1 TSEC(224)	PRTB0335
9752	1122 FORMAT (7HOBOTHR=,1E13.5,5X, 6HBOTFR=,1E13.5, 5X, 6HBOTHC=,	PRTB0336
9753	1 1E13.5, 5X, 6HBOTFC=,1E13.5 /15HORATIO BT F/H =, 1E13.5, 21X,	PRTB0337
9754	2 16HI * NF * RATIO =, 1E13.5)	PRTB0338
9755	K = IK	PRTB0340
9756	GO TO 130	PRTB0350
9757	C	PRTB0360
9758	125 WRITE(6,126)ISEC,NOOM,IK	
9759	126 FORMAT(1H1,5X,6HISEC =,13,5X,6HNOOM =,13,5X,4HIK =,12,31X,	
9760	1 39H** PRTBK (CALLED FROM STRG) - IP(33) **//)	
9761	C	
9762	IF(IK - ND(2))111,120,130	
9763	C	
9764	C BLOCK 2A	PRTB0370
9765	120 WRITE (6,121)TSC(411)	PRTB0380
9766	121 FORMAT (10HOTSC(411)=,F10.6)	PRTB0390
9767	K = IK	PRTB0400
9768	C	PRTB0410
9769	C BLOCKS 1B,2B,3A,4A	PRTB0420
9770	130 WRITE (6,131) K,TDC(194),TSS(43),TSS(44),TSS(45),TSS(PRTB0430
9771	146),TSS(47)	PRTB0440
9772	131 FORMAT (1H0,8X, 1HK,10H TDC(194), 99H TSS(43) TSS(44) PRTB0450
9773	2 TSS(45) TSS(46) TSS(47) / 7X,13,F10.6,5F11.7)	PRTB0460
9774	WRITE(6,1131) ND(72),ND(71),ND(70),ND(51),ND(45),ND(46)	PRTB0451
9775	*,ND(34), ND(33), ND(32), ND(35), ND(86), ND(87) , ND(88)	PRTB0451
9776	1131 FORMAT (5HOIBT=, 12,2X,4HIMX=, 12,2X, 4HIRO=, 12, 3X, 4HISK=, 12,	PRTB0452
9777	12X, 5HISK1=, 12, 2X, 5HISK2=, 12, 2X, 4HIL1=,12, 2X, 4HIL2=, 12,	PRTB0453
9778	22X, 4HIL3=, 12, 4HIMN=, 12 //3X,	PRTB0454
9779	32HCALL TSCH FROM SFCH=, I4, 3X, 21HCALL STBAR FROM TSCH=,I4, 3X,	PRTB0455
9780	*19HSTRINGER SIZE CODE=, I4)	
9781	132 FORMAT (1H 3X,13,8E16.8)	PRTB0460
9782	C	PRTB0470
9783	C *****TEST FOR ID=2 ****	PRTB0480
9784	IF (IK - ND(2)) 133,199,133	PRTB0490
9785	C BLOCK 1C,3B,4B	PRTB0500
9786	133 WRITE(6,134)	
9787	134 FORMAT(6HO TWT)	
9788	DO 139 I=300,330,6	PRTB0510
9789	K = I+ND(5)	PRTB0520
9790	WRITE (6,132)I,(TWT(N),N=I,K,I)	PRTB0530
9791	139 CONTINUE	PRTB0540
9792	C	PRTB0550
9793	C *** TEST FOR BLOCK 4C ****	PRTB0560
9794	140 IF (ND(3) - IK) 141,199,199	PRTB0570
9795	141 WRITE (6,142)	PRTB0580
9796	142 FORMAT (6HO TSC)	PRTB0590
9797	DO 149 I=381,417,6	PRTB0600
9798	K = I+ND(5)	PRTB0610
9799	WRITE (6,132)I,(TSC(N),N=I,K,I)	PRTB0620
9800	149 CONTINUE	PRTB0630
9801	C	PRTB0640
9802	C **EXIT ****	PRTB0650
9803	199 RETURN	PRTB0660
9804	END	PRTB0670

OVERLAY (18,0)

TORQUE-BOX STRUCTURAL SYNTHESIS/WEIGHT ANALYSIS
FOR ADVANCED COMPOSITE DESIGNS

FORTRAN MODULE (LIST,AUTOCEO)

CARD NO **** CONTENTS ****

```
C*****************************************************************
C
C       *****PROGRAM OLAY18*****
C   ***PROGRAM FOR EIGHTH OVERLAY OF WING/EMPENNAGE MODULE***
C       STRUCTURAL SYNTHESIS/WEIGHT ANALYSIS - ADV. COMP DESIGNS
C
C*****************************************************************
C
      PROGRAM OLAY18
C
      COMMON TCOM(9168)
C
      REWIND 24
C
      BUFFER IN(24,1)(TCOM(1),TCOM(9168))
C
      IF(UNIT(24))10,10,10
C
   10 CALL ACPROG
C
      REWIND 24
C
      BUFFER OUT(24,1)(TCOM(1),TCOM(9168))
C
      IF(UNIT(24))20,20,20
C
   20 CONTINUE
C
      END
C*****************************************************************
C
C       *****SUBROUTINE ATBOPT*****
C   ***ADV. COMP. TORQUE-BOX SYNTHESIS CONTROL***
C
C*****************************************************************
C
      SUBROUTINE ATCOPT                                              ATBO0020
C                                                                    CNSR0021
C            ***CONTROL SUBROUTINE FOR ADV. COMPOSITE ANALYSIS***
C             *TORQUE-BOX DESIGN--M/SPAR PLATE OR H-PNLS*
C             *     OR M/RIB STRING OR FULL DEPTH HONEYCOMB*
C
C            ***TYPE ID FOR M/SPAR OR FDH DESIGNS.***
C             *     PLATES--COVER ID = 1 AND SPAR ID = 1 OR 2*
C             *     HC/PNL--COVER ID = 2 AND SPAR ID = 1 OR 2*
C             *     FULL DEPTH HC--COVER ID = 1 AND SPAR ID = 3*
C
C                                                                    CNSR0029
C                                                                    CNSR0100
C                                                                    CNSR0120
C                                                                    CNSR0140
      COMMON T(2060),D(2060),CD(2000),ND(100),TM(900),CT(2048)       CNSR0150
      COMMON /IPRINT/ IP(80)                                         CNSR0151
C                                                                    CNSR0160
      DIMENSION DC(100),TDC(200),TSC(420),TSS(100),THT(400),TSEC(300), CNSR0170
     1TC(400),TT(24),TO(40),                                         CNSR0171
     2SMT(11),TDM(11),                                               CNSR0172
     3DTTRB(2),DEL(30),                                              CNSR0173
     7DBKP(5),APRTID(12),                                            CNSR0177
     8ENP(9),ENM(6),CNT(91),                                         CNSR0178
     9DLCS(24)                                                       CNSR0179
C                                                                    CNSR0180
C                                                                    CNSR0190
C                                                                    CNSR0200
      EQUIVALENCE (DC(1),D(1401)),(TDC(1),T(1341)),(TSC(1),T(1541)), CNSR0210
     1(TSS(1),T(1981)),(THT(1),CD(1101)),(TSEC(1),CD(1501)),         CNSR0211
     2(TC(1),T(960)),(TO(1),T(920)),(TT(1),T(1317)),                 CNSR0212
     3(HHVID,T(57)),(DYPVT,D(200)),(DOPTP,D(1399)),                  CNSR0213
     4(SMT(1),T(734)),(TDM(1),T(542)),(DLCS(1),D(482)),(DELWO,T(107)), CNSR0214
     5(DTTRB(1),T(CG6)),(DEL(1),THT(251)),                           CNSR0215
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CARD NO  ****                          CONTENTS                          ****
   71        8(DLCMU,DEL(1)),(DLCML,DEL(9)),(DELFS,DEL(13)),(DELRS,DEL(17)),   CNSR0216
   72        8(N,ND(30)),(IPA,ND(23)),(IPB,ND(24)),                           CNSR0218
   73        9(NODM,ND(56)),(IGM,ND(61)),(IGT,ND(57)),(IFN,ND(93))            CNSR0219
   74  C                                                                      CNSR0299
   75         EQUIVALENCE (ACID,D(430)),(ACCVID,D(431)),                     CNST0310
   76        1(ACVSTU,D(432)),(ACVSTL,D(433)),(ACFDHC,D(434)),(ACSPID,D(435)),  CNST0311
   77        2(ACFSID,D(436)),(ACRSID,D(437)),(ACSSID,D(438)),(SSMAX,D(359)),   CNST0312
   78        3(SKMN,D(365)),(SKMX,D(366)),(STLMN,D(375)),(STLMX,D(376)),        CNST0313
   79        4(HSTMN,D(377)),(HSTMX,D(378)),(STPMX,D(379)),(BMIN,D(380)),       CNST0314
   80        5(BMAX,D(381)),(ESMIN,D(382)),(STPCN,D(393)),(STFIX,D(394)),       CNST0315
   81        6(ACKNP,D(429)),(ACKIC,D(457)),(DOPLI,D(579)),(DFFRAD,D(47)),      CNST0316
   82        7(ACPNLI,D(458)),(ACPNLF,D(459)),(ACPNLR,D(460)),(DFSMD,D(537)),   CNST0317
   83        8(DTC,D(462)),(DINS,D(465)),(DTCL,D(466)),(DINSL,D(467)),          CNST0318
   84        9(ENP(1),D(1155)),(ENH(1),D(1164)),(DINSHO,D(469))                 CNST0319
   85  C                                                                      CNST0320
   86  C                                                                      CNST0330
   87         EQUIVALENCE (CNT(1),T(1541)),(XSTRU,CNT(1)),(XSTRL,CNT(2)),     CNST0340
   88        1(BRMIN,CNT(3)),(BRMAX,CNT(4)),(ESMIN,CNT(5)),(ESMAX,CNT(6)),     CNST0341
   89        2(BMMAX,CNT(7)),(BMMIN,CNT(40)),(NSPMIN,CNT(17)),(NSPMAX,CNT(18)), CNST0342
   90        3(XTYPE,CNT(10)),(XDCODE,CNT(19)),(XPCODE,CNT(20)),              CNST0343
   91        4(XFCODE,CNT(27)),(XRCODE,CNT(28)),                              CNST0344
   92        5(C3,CNT(31)),(C7,CNT(22)),(CB,CNT(23)),(C9,CNT(34)),(C10,CNT(35)),CNST0345
   93        6(TCPNLU,CNT(29)),(TCPNLL,CNT(30)),(TCPNLI,CNT(31)),             CNST0346
   94        7(TCPNLF,CNT(32)),(TCPNLR,CNT(33)),                              CNST0347
   95        8(PFTSCV,CT(2047)),(PFFSSP,CT(2048)),                            CNST0348
   96        9(BFMIN,CNT(41)),(BFMAX,CNT(42)),(SLMIN,CNT(8))                  CNST0349
   97        A,(SLLMIN,CNT(19)),(STUMIN,CNT(15)),(STLM.N,CNT(16))             CNST0350
   98        B,(DSKLMU,D(440)),(DSKLML,D(441)),(DSTLMU,D(442)),(DSTLML,D(443))  CNST0351
   99        C,(DBKP(1),D(57)),(APRTID(1),T(1070))                            CNST0352
  100  C                                                                      CNST0359
  101  C                                                                      CNSR0360
  102  C                                                                      CNSR0370
  103         REAL NSPMIN,NSPMAX                                             CNST0380
  104  C                                                                      CNSR0390
  105  C                                                                      CNSR0400
  106  C     MT. CALC. ID=IC 1= AREA, 2=AREA AND PANEL MT.                    CNSR0410
  107         IGM = IGT                                                      CNSR0420
  108  C                                                                      CNSR0430
  109  C                                                                      CNSR0440
  110  C           ****SETUP PRINT ID FOR PRTA, PRTB, PRTC, PRTH****          CNSR0450
  111  C            ***IPA = ND(23) = ID FOR PRTA, PRTH.  1.0=PRINT***        CNSR0460
  112  C            ***IPB = ND(24) = ID FOR PRTB, PRTC.  1.0=PRINT***        CNSR0470
  113  C                                                                      CNSR0480
  114         IPA = DC(3)
  115         IPB = DC(3)                                                    CNSR0660
  116  C
  117         IF(ND(1) - NODM)300,306,306
  118  C
  119  C           **IPA FOR NODM GREATER THAN 1**
  120  C
  121    300 IF(IGM-2)301,304,301
  122    301 IF(IP(28))302,302,400
  123    302 IPA = ND(1)
  124        GO TO 400
  125    304 IF(IP(27))305,305,400
  126    305 IPA = ND(1)
  127        GO TO 400
  128  C
  129  C             **IPA FOR NODM=1**
  130  C
  131    306 IF(IP(29))307,307,310
  132    307 IPA = ND(1)
  133  C
  134  C           ** IPB (NODM=1 ONLY)**
  135  C
  136    310 IF(IGM-2)312,316,312
  137    312 IF(IP(32))314,314,400
  138    314 IPB = ND(1)
  139        GO TO 400
  140  C
  141    316 IF(IP(31))318,318,400
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CARD NO  ****                          CONTENTS                          ****
  142        318 IPB = ND(1)
  143       C                                                            CNSR0300
  144       C                                                            CNSR2900
  145       C                                                            CNSR2910
  146       C
  147       C                                                            CNSR0350
  148       C                                                            CNSR0400
  149       C                                                            CNSR0430
  150       C                                                            CNSR0440
  151       C
  152       C            ***SETUP RECD DATA FOR ADV. COMP. SYNTHESIS***
  153       C
  154       C              *C7 FOR M/SPAR DESIGN ONLY.  0.0 FOR M/RIB AND FCH*
  155       C              *FDH ID = ACCVID=3 AND ACID MUST BE = 2 FOR M/STARS*
  156       C
  157       C             **CLEAR CNT ARRAY**
  158        400  DO 4000 I=1,91
  159             CNT(I) = DC(3)
  160        4000 CONTINUE
  161       C
  162             C3 = DKMPLI
  163             C7 = ACKIC
  164             C8 = ACKNP
  165             PFFSSP = DPFRHO
  166             PFFSCV = DPFRHO * DFSRHO
  167             TCPNLI = DC(3)
  168             TCPNLF = DC(3)
  169             TCPNLR = DC(3)
  170             XPCODE = ACSPID
  171             IF (ACSPID - D(2)) 403,401,403
  172        401  TCPNLI = ACPNLI
  173             IF (ACPNLI) 402,402,403
  174        402  TCPNLI = ENH(4)
  175        403  XFCODE = ACFSID
  176             IF (D(2) - ACFSID) 404,404,40F
  177        404  TCPNLF = ACPNLF
  178             IF (ACPNLF) 405,405,406
  179        405  TCPNLF = ENH(4)
  180        406  XRCODE = ACRSID
  181             IF (D(2) - ACRSID) 407,407,409
  182        407  TCPNLR = ACPNLR
  183             IF (ACPNLR) 408,408,409
  184        408  TCPNLR = ENH(4)
  185       C
  186       C             **XKCODE FOR M/SPAR AND FDH ONLY**
  187       C              *IF FDH, XKCODE = 1 AND XPCODE = 3*
  188       C              *C8,C10,C7=0.0*
  189       C            ***FDH ID = ACCVID = D(431) = 3***
  190        409  XKCODE = D(1)
  191             TCPNLU = DC(3)
  192             TCPNLL = DC(3)
  193             C8 = DC(3)
  194             C10 = DC(3)
  195             IF (D(2) - ACCVID) 4090,410,414
  196        4090 XPCODE = D(3)
  197             XKCODE = D(1)
  198             C7 = 0.0
  199             TCPNLI = DC(3)
  200             PFFSCV = DPFRHO/D(2) * DFSRHO
  201             GO TO 440
  202       C
  203       C             *M/SPAR-HC/PNL.  XKCODE=2*
  204        410  XKCODE = D(2)
  205             TCPNLU = DTC
  206             IF (DTC) 411,411,412
  207        411  TCPNLU = ENH(4)
  208        412  C8 = TCPNLU*DINS/ENP(8)*DINRHO
  209             TCPNLL = DTCL
  210             IF (DTCL) 413,413,4130
  211        413  TCPNLL = ENH(4)
  212        4130 C10 = TCPNLL*DINSL/ENP(8)*DINRHO
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```
CARD NO  ****                          CONTENTS                          ****
  213    C
  214    C
  215    C            ***M/SPAR OR M/RIB COVER DESIGN****
  216    C             **SETUP COVER DESIGN CONSTRAINTS FOR SPAR AND/OR RIBS**
  217    C              *TEST CONST ID   1=M/SPAR,  2=M/RIBS*
  218     414  IF (ACID - D(1)) 415,415,416
  219    C
  220    C             **DATA FOR M/S   ANLY**
  221    C              *XSTRU AND  STRL = TYPE OF STRINGER (FR/LNR)*
  222    C              *     1=I, 2=Z, 3=T, 4=HAT*
  223     415  C7 = DC(3)
  224          XSTRU = ACVSTU
  225          IF (XSTRU) 4150,4150,4151
  226     4150 XSTRU = D(1)
  227     4151 XSTRL = ACVSTL
  228          IF (XSTRL) 4152,4152,4153
  229     4152 XSTRL = D(1)
  230     4153 BMIN = STLMN
  231          BMAX = STLMX
  232          BMIN = HSTMN
  233          BMAX = HSTMX
  234          BFMIN = STFMN
  235          BFMAX = STFMX
  236          SLUMIN = DSKLMU
  237          SLLMIN = DSKLML
  238          STUMIN = DSTLMU
  239          STLMIN = DSTLML
  240    C
  241    C             **XTYPE = TYPE OF STR/SPAR ORIENTATION**
  242    C              *1=CONST NOS, 2=CONST B.**
  243    C              *USE STRCN--D(393) FOR ID SETUP*
  244    C              *     0,1,3 = CONST B,  2=CONST NOS*
  245     416  XTYPE = D(1)
  246          IF (STRCN - D(2)) 4160,417,4160
  247     4160 XTYPE = D(2)
  248    C
  249    C            ***SETUP SPAR/STR SPACING AND NO OF SPAR/STR LIMITS***
  250     417  BSMIN = BMIN
  251          BSMAX = BMAX
  252          NSPMIN = SNMIN
  253          NSPMAX = SNMAX
  254    C
  255    C             **TYPE OF SEARCH CONTROL DATA--INPUT .B,NOS) OR SEARCH**
  256    C              *IF SEARCH, TEST FOR CONST NOS AND SETUP RANGE OF NOS*
  257    C
  258    C             **NOS RANGE = F(BMIN,BMAX, SPECIFIED NOSMIN,NOSMAX**
  259    C              *     NMAX = F(W(MIN)/BMIN OR INPUT MAX*
  260    C              *     NMIN = F(W(MIN)/BMAX OR INPUT MIN OR 0.)*
  261    C
  262     418  IF (ACSSID) 420,420,440
  263     420  IF (XTYPE - D(1)) 421,421,440
  264     421  IF (NSPMAX - NSPMIN) 422,440,423
  265     422  NSPMAX = NSPMIN
  266          GO TO 440
  267    C
  268     423  TT(1) = TBH(1)
  269          DO 425 I=1,10
  270          IF (TBH(I+1) - TT(1)) 424,425,425
  271     424  TT(1) = TBH(I+1)
  272     425  CONTINUE
  273    C
  274          TT(2) = TT(1)/BSMAX - D(1)
  275          TT(3) = TT(1)/BSMIN - D(1)
  276          TT(4) = DC(3)
  277          IF (TT(2)) 427,427,426
  278     426  TT(4) = INT(TT(2))
  279     427  TT(5) = DC(3)
  280          IF (TT(3)) 429,429,428
  281     428  TT(5) = INT(TT(3))
  282    C
  283    C             **COMPARE CALC NMIN,NMAX WITH INPUT NMIN,NMAX**
```

```
CARD NO  ****                          CONTENTS                          ****
  284    C              *USE LARGER OF MIN, SMALLER OF MAX*
  285     429  IF (NSPMIN - TT(4)) 430,430,431
  286     430  NSPMIN = TT(4)
  287     431  IF (TT(5) - NSPMAX) 432,432,433
  288     432  NSPMAX = TT(5)
  289     433  IF (NSPMAX - NSPMIN) 434,440,440
  290     434  NSPMIN = NSPMAX
  291    C
  292    C
  293    C            ***SETUP POINT ID--APRTID(1-11) AND (12) FROM DBKP(1-5)***
  294    C             **(1-11) = STATION DETAILS--0=NO PRINT, 1=PRINT.
  295    C             **   (12)=GENL DATA **
  296    C             *GENL DATA--PRINT ON DBKP(1)=1 OR 2 FOR NOOM SET BY
  297    C             *     DBKP(5)*
  298    C             *STATION DATA--PRINT ON DBKP(1)=2 ONLY FOR NOOM SET BY
  299    C             *     DBKP(5) AND STATIONS INDICATED BY DBKP(2,3,4)*
  300    C
  301     440  DO 441 I=1,12
  302          APRTID(I) = D(3)
  303     441  CONTINUE
  304          N = DBKP(5)
  305          IF (NOOM - N) 450,442,450
  306     442  APRTID(12) = DBKP(1)
  307    C
  308    C             **STATION ID**
  309          IF (DBKP(1) - D(2)) 450,443,450
  310     443  DO 445 I=1,3
  311          N = DBKP(I+1)
  312          IF (N) 445,445,444
  313     444  APRTID(N) = D(1)
  314     445  CONTINUE
  315    C
  316    C
  317    C            ***TEST FOR H/SPAR OR H/RIB ANALYSIS***
  318    C             **1=H/RIB,  2=H/SPAR**
  319    C
  320     450  IF (ACID - D(1)) 451,451,460
  321     451  CALL ACHRDS
  322    C
  323          GO TO 500
  324    C
  325    C            ***H/SPAR***
  326     460  CALL ACHMS
  327    C
  328    C            ***DO WEIGHT ANALYSIS***
  329     500  CALL ACWSTR
  330    C
  331    C                                                                CWSR2920
  332    C            ***PROCESS FINAL WTS.  ADD INBD PNL(0) DATA, SETUP SUMS***CWSR2929
  333     8900 TWT(1) = TWT(1) + TWT(56)                                  CWSR2930
  334          TWT(30) = TWT(30) + DTTR8(1)                               CWSR2935
  335          DO 8901 I=1,5                                              CWSR2940
  336          TWT(I+44) = TWT(I+44) + TWT(I+95)                          CWSR2945
  337          TC(I+133) = TWT(I+44)                                      CWSR2950
  338     8901 CONTINUE                                                   CWSR2955
  339    C                                                                CWSR2960
  340          TC(139) = TWT(52)                                          CWSR2965
  341          TC(140) = TWT(54)                                          CWSR2970
  342          TWT(40) = TWT(40) + TWT(55)                                CWSR2975
  343          TWT(41) = TWT(41) + TWT(55)                                CWSR2980
  344    C                                                                CWSR2990
  345    C                                                                CWSR3000
  346    C                                                                CWSR3110
  347    C                                                                CWSR3110
  348    C      SUM DELTA WF INTO ELEMENTS WTS                            CWSR3120
  349    C     UPPER COVER                                                CWSR3130
  350     700  TWT(9) = DLCVU*TWT(9) + TWT(19)                            CWSR3140
  351          TWT(10) = DLCVU*TWT(10) + TWT(20)                          CWSR3150
  352          TWT(11) = DLCVU*TWT(11) + TWT(21)                          CWSR3160
  353          TWT(12) = TWT(9) + TWT(10) + TWT(11)                       CWSR3170
  354    C                                                                CWSR3180
```

```
CARD NO   ****                    CONTENTS                              ****
      C      LOWER COVER                                                CNSR3190
             TWT(12) = DLCVL*TWT(12) + TWT(22)                          CNSR3200
             TWT(13) = DLCVL*TWT(13) + TWT(23)                          CNSR3210
             TWT(14) = DLCVL*TWT(14) + TWT(24)                          CNSR3220
             TWT(3) = TWT(12)+ TWT(13) + TWT(14)                        CNSR3230
      C                                                                 CNSR3240
      C      I-RIBS                                                     CNSR3250
             TWT(5) = TWT(5) + TWT(25)                                  CNSR3260
      C                                                                 CNSR3270
      C      TORQUE-BOX MISC.                                           CNSR3280
             TWT(8) = TWT(8) + TWT(20) + TWT(23)                        CNSR3290
      C                                                                 CNSR3300
      C      FRONT SPAR                                                 CNSR3310
             TWT(15) = DELFS*TWT(15)                                    CNSR3320
             TWT(16) = DELFS*TWT(16) + TWT(26)                          CNSR3330
             TWT(6) = TWT(16)+ TWT(15)                                  CNSR3340
      C                                                                 CNSR3350
      C      REAR SPAR                                                  CNSR3360
             TWT(17) = DELRS*TWT(17)                                    CNSR3370
             TWT(18) = DELRS*TWT(18) + TWT(27)                          CNSR3380
             TWT(7) = TWT(18)+ TWT(17)                                  CNSR3390
      C                                                                 CNSR3400
      C
      C                                                                 CNSR2920
      C              ***TEST FOR NOOW PASS***                           TBOP2930
      C                *PROCESS PIVOT/C-SEC ON NOOW=1*                  TBOP2940
             IF (NOOW - NO(1)) 700,700,790                              TBOP2950
      C                                                                 TBOP2960
      C             ****TEST FOR PIVOT CALC****                         CNSR3310
      C                *IF PIVOT, SAVE TC(1-340) IN TSC(41-380) AND CLEAR TC   TBOP3311
        700  IF (DYPVT) 701,701,7000                                    CNSR3320
        7000 DO 7001 I=1,340                                            CNSR3330
             TSC(I+40) = TC(I)                                          TBOP3340
             TC(I) = DC(3)                                              CNSR3350
        7001 CONTINUE                                                   CNSR3360
      C                                                                 CNSR3370
             CALL PIVOT                                                 CNSR3380
      C                                                                 CNSR3390
      C                                                                 CNSR3400
      C              ***TOTAL WEIGHTS/AV. FOR WING, HORI, VERT***       CNSR3410
      C                *(WT)/AV=(WT)/SIDC*2/K*                          CNSR3411
      C              *K=1 FOR WING AND HORI.  K=1 OR 2 FOR VERT=F(NO OF PNLS)CNSR3412
      C              *            K=2 FOR 1 PNL, 1 FOR 2 PNLS*          CNSR3413
      C                                                                 CNSR3419
        701  DO 7010 I=1,149                                            CNSR3420
             TWT(I) = TWT(I)*D(2)/WHVID                                 CNSR3430
        7010 CONTINUE                                                   CNSR3435
      C                                                                 CNSR3438
      C             ****SAVE TWT(1-100) IN TEMP LOC CT(1-100)****       CNSR3439
             DO 702 I=1,100                                             CNSR3440
             CT(I) = TWT(I)                                             CNSR3441
        702  CONTINUE                                                   CNSR3442
      C                                                                 CNSR3445
      C                                                                 CNSR3450
      C        TEST FOR C-SEC WT CALC -- ID IN D(480)=C-SEC WIDTH AT C.L.     CNSR3460
      C        INTERIM C-SEC SUBR -- 10-14-65 --W(C-SEC)=DELCS*WT/IN AT SEC.11CNSR3470
      C                                                                 CNSR3480
      C        DO C-SEC.  TEST FOR CALC IN SUBR                         CNSR3490
        710  CALL CSECW                                                 CNSR3500
      C                                                                 CNSR3510
      C        APPLY DEL(CU, CL, FS, RS) TO C-SEC ELEMENTS WTS          CNSR3520
             DO 711 I=1,2                                               CNSR3530
             TSS(I+8) = DLCS(1)*TSS(I+8)                                CNSR3540
             TSS(I+11)=DLCS(4)*TSS(I+11)                                CNSR3550
             TSS(I+14)=DLCS(13)*TSS(I+14)                               CNSR3560
             TSS(I+16)=DLCS(17)*TSS(I+16)                               CNSR3570
        711  CONTINUE                                                   CNSR3580
             TSS(11) = DLCS(1)*TSS(11)                                  CNSR3590
             TSS(14) = DLCS(4)*TSS(14)                                  CNSR3600
      C                                                                 CNSR3610
             IF (TSS(1)) 712,714,712                                    CNSR3620
```

CARD NO **** CONTENTS ****

```
C                                                                  CNSR3630
C              ***CSEC WT. DATA PRINT--SAME ID AS PRTA ID***       CNSR3638
C                 *SET N=1 FOR OUTPUT BY PRTH*                     CNSR3639
  712 IF (IPA) 714,714,713                                         CNSR3640
  713 N = ND(1)                                                    CNSR3650
      CALL PRTH                                                    CNSR3660
C                                                                  CNSR3670
C              ***TOTAL WING DATA--OPNL + CSEC***                  CNSR3680
C        W(CSEC) = W(STRU) + W(NSC)                                CNSR3690
  714 TWT(43) = TSS(1) + TSS(2)                                    CNSR3700
      TWT(40) = TWT(40) + DELWG*TWT(43)                            CNSR3705
C                                                                  TBOP3706
C                 *TEST IF PIVOT DESIGN*                           TBOP3707
C                 *IF PIVOT, TOTALS DATA IN TSC(41-330),           TBOP3708
C                 *IF NO PIVOT, TOTALS DATA IN TC(1-340)*          TBOP3709
      IF (DYPVT) 715,715,716                                       TBOP3710
  715 TC(141) = TWT(43)*WHVID/D(2)                                 CNSR3715
      TC(134) = TC(134) + TC(141)*DELWG                            CNSR3716
      GO TO 720                                                    CNSR3717
C                                                                  CNSR3719
  716 TSC(181) = TWT(43)*WHVID/D(2)                                CNSR3720
      TSC(174) = TSC(174) + TSC(181)*DELWG                         CNSR3725
C                                                                  CNSR3726
C                                                                  CNSR3727
C              ***SAVE WT SUMMARIES SWT ARRAY FOR WODATA SUBR***   CNSR3728
C                 *TWT(40-43),(46-52)=11*                          CNSR3729
  720 SWT(1) = TWT(40)                                             CNSR3730
      SWT(2) = TWT(41)                                             CNSR3735
      SWT(3) = DC(3)                                               CNSR3740
      SWT(4) = TWT(43)                                             CNSR3745
      DO 721 I=1,7                                                 CNSR3750
      SWT(I+4) = TWT(I+45)                                         CNSR3755
  721 CONTINUE                                                     CNSR3760
C                                                                  CNSR3769
C        SAVE TOTAL WEIGHT DATA FOR SUMMARY TABLE PRINT -- TYPE D  CNSR3770
C              **FOR BASIC OPNL, SAVE TWT(1-33),(35-43),(45-53),(67,70)*CNSR3771
C                                                                  CNSR3780
C       FOR PIVOT CASE, COMPUTE DELTA WTS AND SETUP FINAL WT TABLE CNSR3790
C        PIVOT WTS IN TSS(26-50) DELTA OPNL TWT(1-50) C-SEC TSS(1-25) CNSR3800
C                                                                  CNSR3810
C              ***SAVE BASIC WTS ON RCDS 184, 185, 186 FOR GW(1,2,3)$$ CNSR3820
C                 *FINAL LOC FOR SUBR PRTD WILL BE CO(400-699)*    CNSR3830
C                                                                  CNSR3840
  750 DO 753 I=1,50                                                CNSR3850
      TSS(I+50) = TSS(I)                                           CNSR3855
      IF (I - 30) 751,751,753                                      CNSR3860
  751 TSS(I) = TWT(I)                                              CNSR3870
      IF (I - ND(9)) 752,752,753                                   CNSR3880
  752 TSS(I+30) = TWT(I+34)                                        CNSR3890
      TSS(I+39) = TWT(I+44)                                        CNSR3895
  753 CONTINUE                                                     CNSR3900
      TSS(49) = TWT(67)                                            CNSR3910
      TSS(50) = TWT(70)                                            CNSR3915
      IF4 = IGW + 183                                              CNSR3916
      CALL WRITMS (1,TSS(1),100,IF4)                               CNSR3917
C                                                                  CNSR3919
C        CHECK FOR DELTA PIVOT CALC   CLEAR TSS,TWT (1-50)         CNSR3920
  754 DO 755 I=1,50                                                CNSR3930
      TWT(I) = DC(3)                                               CNSR3940
      TSS(I) = DC(3)                                               CNSR3950
  755 CONTINUE                                                     CNSR3960
C                                                                  CNSR3969
      IF (DYPVT) 770,770,760                                       CNSR3970
C                                                                  CNSR3980
C        DO DELTA WTS                                              CNSR3990
  760 CALL DLPVT                                                   CNSR4000
      SWT(3) = TSS(26)                                             CNSR4005
C                                                                  CNSR4010
C              **RESET TC(1-340) FROM TSC(41-380)**                CNSR4020
      DO 761 I=1,340                                               CNSR4030
      TC(I) = TSC(I+40)                                            CNSR4040
```

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CARD NO  ****                         CONTENTS                          ****

      781 CONTINUE                                                   CNSR4050
     C                                                               CNSR4060
     C        MOVE DELTA WT SUMMARIES                                CNSR4070
     C              *SAVE ON RCDS 187, 188, 189*                     CNSR4080
     C              *FINAL LOC FOR SUBR PRTD WILL BE CD(800-1099)*   CNSR4090
      770 DO 771 I=1,50                                              CNSR4100
          TSS(I+50) = TSS(I)                                         CNSR4110
          TSS(I) = TWT(I)                                            CNSR4120
      771 CONTINUE                                                   CNSR4130
          IF4 = IGW + 186                                            CNSR4140
          CALL WRITMS (1,TSS(1),100,IF4)                             CNSR4150
     C                                                               CNSR4159
     C            ***PIVOT WT, DELTA WT PRINT--SAVE ID AS PRTA ID*** CNSR4160
     C               SET N=2 FOR DATA                                CNSR4170
     C        SET N=2 FOR PRTH PRINT--TEMP---                        CNSR4180
      780 N = ND(2)                                                  CNSR4190
          IF (DYPVT) 783,783,781                                     CNSR4200
      781 IF (IPA) 783,783,782                                       CNSR4210
      782 CALL PRTH                                                  CNSR4220
     C                                                               CNSR4230
     C             **SETUP NODH=1 EXIT.  TEST FOR TYPE A PRINT**     CNSR4240
     C            ***RESET TWT(1-100) FROM TEMP LOC CT(1-100) FOR PRTA PRINTCNSR4250
      783 DO 784 I=1,100                                             CNSR4260
          TWT(I) = CT(I)                                             CNSR4270
      784 CONTINUE                                                   CNSR4280
     C                                                               CNSR4290
     C            ***TEST FOR DESIGN SUMMARY DATA--TYPE A.  NODH=1*** CNSR4300
     C             **IF NO PRINT, SETUP STIFFNESS DATA IN CD(1-100), CNSR4310
     C              *    FROM RCD 40**                               CNSR4320
     C              *IF PRINT, ACPRTA WILL SETUP CD(1-400)**         CNSR4330
          IF (IPA) 785,785,791                                       CNSR4340
      785 CALL READMS (1,CD(1),400,40)                               CNSR4350
          GO TO 799                                                  CNSR4360
     C                                                               CNSR4370
     C            ***NODH=2-5--TEST FOR TYPE A PRINT***              CNSR4380
      790 IF (IPA) 799,799,791                                       CNSR4390
      791 CALL ACPRTA                                                CNSR4400
     C                                                               CNSR4410
     C                                                               CNSR9900
     C            ***EXIT***                                         CNSR9910
     C                                                               CNSR9950
      799 RETURN                                                     CNSR9990
          END                                                        CNSR9999
     C*******************************************************.*****************
     C
     C        *****SUBROUTINE ACLOAD*****
     C   ***DESIGN LOAD DATA PROCESS - ADV. COMP. ANALYSIS***
     C
     C*******************************************************:******************
     C
          SUBROUTINE ACLOAD                                          ACL00010
     C                                                               AL000020
     C            ***AIR LOADS DATA PROCESSING SUBR***               AL000030
     C                                                               AL000040
          COMMON T(2060),D(2060),CD(2000),ND(100),TH(900),CT(2048)   AL000150
          COMMON /IPRINT/ IP(80)                                     AL000151
     C                                                               AL000160
          DIMENSION DC(100),TSEC(300),TDGH(11),TT(24),               AL000170
         1PNZH(11),VPNZ(11),VNNZ(11),ZNNH(11),                       AL000171
         2ALPV(11),ALPH(11),ALNV(11),ALNH(11),                       AL000172
         3CALI(12),      TR(17),TO(300) TANO(9),CCLO(9),SINO(6),COSO(6), AL000173
         4PNZT(11),ZNNT(11),ALPT(11),ALNT(11),                       AL000174
         5WAVLID(24),WBO(200),ACL(930),TEMP(20),                     AL000175
         6TFLD(10),                                                  AL000176
         7TFLDI(8),DCDLI(8),                                         AL000177
         8YSTRC(11)                                                  AL000178
     C                                                               AL000180
          EQUIVALENCE (DC(1),D(1431)), (TSEC(1),CD(1501)) (TDGH(1),T(430)), AL000190
         1(TT(1),T(1317)),(YSTRC(1),TSEC(168)),(DGHO,D(105)),        AL000191
         2(PNZ,D(85)),(ZNZ,D(86)),(DALV,D(255)),(DALCP,D(256)),      AL000192
         3(DCPCD,D(257)),(DCPYL,D(233)),(DEXV,D(232)),               AL000193
```

CARD NO **** CONTENTS ****

```
     4(ALGS,D(235)),(ALGAR,D(236)),(ALSTR,D(237)),(ALGSI,D(233)),       AL000194
     5(PNZH(1),D(260)),(VPNZ(1),D(537)),(VNZ(1),D(535)),(   (1),D(703)AL000195
     6),(TANO(1),T(122)),(CCLO(1),T(131)),(SINO(1),T(140)),             AL000195
     7(ALPV(1),T(554)),(ALPH(1),T(565)),(ALNV(1),T(576)),(ALNM(1),T(587)AL000197
     8),(CKNOL,D(392))                                                  AL000198
C                                                                       AL000193
      EQUIVALENCE (BO2,T(12)),(DS1,T(15)),(EDXP,T(96)),(CF,T(52)),      AL000200
     1(CTIP,T(37)),(TANAC,T(38)),(WREA,D(240)),(CFCEA,D(127)),          AL000201
     2(CAL1(1),D(220)),              (TR(1),T(1305)),(T(1),T(1001)),AL000202
     3(PNZT(1),D(1019)),(ZNT(1),D(1030)),                               AL000203
     4(ALPT(1),T(877)),(ALNT(1),T(E  )),                                AL000204
     5(COSO(1),T(146)),(COTEA,T(152)),(ALREF,D(239)),                   AL000205
     8(NPAGE,ND(65)),(NSEC,ND(9)),                                      AL000208
     9(N,ND(31)),(K,ND(30)),(I,ND(29)),(L1D,ND(54)),(NCASE,ND(60))      AL000209
C                                                                       AL000210
      EQUIVALENCE (NHVLID(1),CD(53 )),(IZO(1),CD(550)),                 AL000220
     1(SLOID,D(205)),(TEMP(1),CT(2003)),                                AL000221
     2(DPNZ,T(20)),(DNNZ,T(21)),(DG O,D(105)),(TO O,D(E3)),             AL000222
     3(DHTI,D(259)),(VTID,D(209)),                                      AL000223
     4(TFLD(1),T(631)),(TT(1),T(1317)),                                 AL000224
     8(DFLD(1),D(159)),(DCDL(1),D(167)),                                AL000228
     9(ACL(1),CT(1)),(ILCASE,ND(4))                                     AL000229
C                                                                       AL000230
C                                                                       AL000240
C          ***TEST FOR TYPE OF LOADS CALC--INPUT, CALC BY ALOAD OR      AL000250
C             SETUP BY BLCNTL***                                        AL000260
C             *CLEAR ACL(1-900)*                                        AL000270
  300 DO 301 I=1,900                                                    AL000280
      ACL(I) = DC(3)                                                    AL000290
  301 CONTINUE                                                          AL000300
C                                                                       AL000310
C             *CLEAR NHVLID(1-24)-NO OF LOADS ID*                       AL000320
      DO 302 I=1,24                                                     AL000320
      NHVLID(I) = DC(3)                                                 AL000340
  302 CONTINUE                                                          AL000350
C                                                                       AL000360
      IF (SLOID) 310,310,320                                            AL000370
C                                                                       AL000380
C          ***SET UP TWO LOADS ONLY  FROM INPUT SET***                  AL000390
  310 DO 311 I=1,11                                                     AL000400
      ACL(I) = ALPV(I)                                                  AL000410
      ACL(I+11) = ALPH(I)                                               AL000420
      ACL(I+22) = ALPT(I)                                               AL000430
      ACL(I+33) = ALNV(I)                                               AL000440
      ACL(I+44) = ALNM(I)                                               AL000450
      ACL(I+55) = ALNT(I)                                               AL000460
  311 CONTINUE                                                          AL000470
C                                                                       AL000480
      ACL(661) = DPNZ                                                   AL000490
      ACL(662) = DNNZ                                                   AL000500
C                                                                       AL000510
      DO 312 I=1,2                                                      AL000520
      ACL(I+680) = DHTI                                                 AL000530
      ACL(I+700) = D(I)                                                 AL000540
      ACL(I+720) = D(I)                                                 AL000550
      ACL(I+740) = D(I)                                                 AL000560
      ACL(I+760) = D(I)                                                 AL000570
      ACL(I+780) = D(I)                                                 AL000580
      ACL(I+800) = TOOWO                                                AL000590
      ACL (I+820) = DOWO                                                AL000600
  312 CONTINUE                                                          AL000610
C                                                                       AL000620
C             **NO OF LOADS=2**                                         AL000630
      ILCASE = ND(2)                                                    AL000640
C                                                                       AL000650
      GO TO 380                                                         AL000660
C                                                                       AL000670
C          ***LOADS CALC BY BLCNTL ROUTINES--24 SE.S ON RCD 160-183**AL001000
C             *COND. CALC ID ON RCD 159--USE COND 1-23, BUT 20 MAX*     AL001010
C                                                                       AL001020
  320 CALL READMS (1,NHVLID(1),24,159)                                  AL001030
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CARD NO  ****                          CONTENTS                          ****
  639    C                                                                ALO01040
  640    C                                                                ALO01050
  641    C                                                                ALO01060
  642    C     VERTICAL TAIL LOADS SHOULD BE A SET EQUAL AND OPPOSITE
  643    C     LOADS.  THIS SECTION WILL DO JUST THAT WITHOUT RUNNING A COMPLETE
  644    C     NEW SET OF LOADS.  ONE EXCEPTION IS WHEN THERE IS A "T" TAIL THEN
  645    C     THE SET OF LOADS WILL BE TOO LARGE FOR THE DIMENSION
  646    C     STATEMENT .  SOME THE LOADS SETS ARE ROUTINELY ELIMINATED
  647    C     IN THIS SITUATION.
  648    C
  649          IF ( D(200) ) 3540,3540,3505                                 ALO01061
  650     3540 L4 = 0
  651          GO TO 3530
  652     3525 L4 = 11
  653     3530 ILCASE = DC(3)
  654          DO 3790 NN=1,23                                              ALO01080
  655          N=NN                                                         ALO01081
  656          IF ( VTID ) 3500,3500,3600                                   ALO01082
  657     3600 IF ( D(357)) 3500,3500,3505                                  ALO01082
  658     3505 N = 24+NN                                                    ALO01082
  659     3500 IF ( NAVLID(N)) 3790,3790,32                                 ALO01091
  660      321 ILCASE = ILCASE + ND(1)                                      ALO01100
  661          IFL = N + 159                                                ALO01110
  662          CALL READMS (1,NBO(1),200,IFL)                               ALO01120
  663    C                                                                  ALO01130
  664    C              *TEST FOR TAILS AND MOVE LOAD DATA TO WING LOC IF TAILS*ALO01140
  665          CHECK = 0.0                                                  ALO01090
  666          VERT = 0.0                                                   ALO01141
  667          IF ( VTID) 3210,3210,3211                                    ALO01142
  668     3211 VERT = 1.0                                                   ALO01143
  669     3210 K = 138                                                      ALO01150
  670          IF (VTID)  322,325,323                                       ALO01160
  671      322 K = 83                                                       ALO01170
  672      323 DO 324 I=1,44                                                ALO01180
  673          J = K + I                                                    ALO01190
  674          NBO(I+30) = NBO(J)                                           ALO01200
  675      324 CONTINUE                                                     ALO01210
  676    C
  677          IF ( VTID ) 325,325,3605                                     ALO01211
  678     3605 IF (D(357)) 325,325,3510                                     ALO01211
  679     3510 ACN = INT(NZO(1)/100.)                                       ALO01212
  680          A = INT(ACN/100.)                                            ALO01213
  681          A = 100. *A                                                  ALO01213
  682          NN = ACN - A                                                 ALO01214
  683          IF ( NN .GE. 18 ) GO TO 325                                  ALO01215
  684          IF ( NN .GE. 14 ) GO TO 3252                                 ALO01216
  685          IF ( NN .GE. L4 ) GO TO 325                                  ALO01217
  686          CHECK = 1.0                                                  ALO01218
  687          IF ( NN .LE. 1 )  CHECK = 0.0                                ALO01218
  688    C                                                                  ALO01220
  689    C              **MOVE V,M,T--STORED TIP TO ROOT IN BO ARRAY**      ALO01230
  690    C               *REORDER TO ROOT-TIP*                              ALO01240
  691      325 K = ILCASE*33 -33                                            ALO01250
  692          DO 3250 I=1,11                                               ALO01260
  693          L = K + I                                                    ALO01270
  694          J = ND(4)*(ND(12) - 1) + ND(3)                               ALO01280
  695          ACL(L) = NBO(J+31)                                           ALO01290
  696          ACL(L+11) = NBO(J+32)                                        ALO01300
  697          ACL(L+22) = NBO(J+33)                                        ALO01310
  698     3250 CONTINUE                                                     ALO01320
  699          IF( ABS(ACL(K+1))+ABS(ACL(K+12))+ABS(ACL(K+23))-1.0)         ALO01321
  700         1 3252,3252,3251                                              ALO01321
  701     3252 ILCASE = ILCASE-ND(1)                                        ALO01322
  702          GO TO 3790                                                   ALO01323
  703    C                                                                  ALO01330
  704    C              **SETUP GENL DATA**                                 ALO01340
  705    C                                                                  ALO01341
  706    C               ***TEMP FIX FOR DELTA FUEL/COL SEQUENCE***         ALO01342
  707      3251 IF (CHECK ) 3515,3515,3520                                  ALO01331
  708     3520 FMX1 = ABS ( ACL(LPREV + 11))                                ALO01332
  709          FMX2 = ABS ( ACL(L+11 ))                                     ALO01333
```

CARD NO	**** CONTENTS	****
710	CHECK = 0.0	AL001334
711	IF (FMX2 .LT. FMX1) GO TO 3252	AL001335
712	ILCASE = ILCASE - 2	AL001336
713	GO TO 325	AL001337
714	3515 WBO(191) = DFLD(3)	AL001342
715	WBO(192) = DFLD(7)	AL001343
716	WBO(189) = DCDL(3)	AL001344
717	WBO(190) = DCDL(7)	AL001345
718	C	AL001349
719	C *NZ, TEMP, RDW, RFL1, RFL2, RCDL1, RCDL2, TOSW, DSW*	AL001350
720	ACL(ILCASE+660) = WBO(18)	AL001360
721	ACL(ILCASE+840) = WBO(1)	AL001365
722	ACL(ILCASE+800) = WBO(181)	AL001370
723	ACL(ILCASE+820) = WBO(182)	AL001380
724	ACL(ILCASE+860) = WBO(184)	AL001381
725	ACL(ILCASE+890) = WBO(185)	AL001382
726	ACL(ILCASE+680) = WBO(186)	AL001390
727	ACL(ILCASE+700) = D(1)	AL001400
728	IF (VTID) 326,7	AL001410
729	326 ACL(ILCASE+680) = WBO(187)	AL001420
730	IF (WBO(20)) 327,329,329	AL001430
731	327 ACL(ILCASE+700) = -D(1)	AL001440
732	GO TO 329	AL001450
733	328 ACL(ILCASE+680) = WBO(188)	AL001460
734	C	AL001470
735	C **SETUP DELTA FUEL AND CDL CONSTANTS**	AL001480
736	329 ACL(ILCASE+720) = TFLD(1)	AL001490
737	ACL(ILCASE+740) = TFLD(2)	AL001500
738	ACL(ILCASE+760) = D(1)	AL001510
739	ACL(ILCASE+780) = D(1)	AL001520
740	IF (VTID) 370,330,370	
741	330 ACL(ILCASE+760) = D(1) - WBO(189)	AL001540
742	ACL(ILCASE+780) = D(1) - WBO(190)	AL001550
743	C	AL001560
744	C *FUEL CONSTANTS*	AL001570
745	IF (WBO(184)) 370,370,331	AL001580
746	331 ACL(ILCASE+720) = D(1)	AL001590
747	ACL(ILCASE+740) = D(1)	AL001600
748	C	AL001610
749	C *TEST FUEL CELL-1. 0=NO, 1=YES*	AL001620
750	IF (WBO(191)) 332,332,337	AL001630
751	332 IF (WBO(192)) 370,370,333	AL001640
752	C	AL001650
753	C *FUEL CELL 2 ONLY. NO CHANGE IN FUEL CELL 1*	AL001660
754	333 IF (TFLD(8)) 370,370,334	AL001670
755	334 TT(2) = TFLD(8) - WBO(184)/D(2)	AL001680
756	IF (TT(2)) 335,336,336	AL001690
757	335 TT(2) = DC(3)	AL001700
758	336 ACL(ILCASE+740) = (TT(2) + TFLD(10))/TFLD(8)	AL001710
759	GO TO 370	AL001720
760	C	AL001730
761	C *CELL 1 OR 2. CHECK 1 FIRST*	AL001740
762	337 IF (WBO(191) - D(2)) 338,346,346	AL001750
763	C	AL001760
764	C *SEQUENCE=1,2. CHECK FOR FUEL IN CELL 1.*	AL001770
765	338 IF (TFLD(7)) 332,332,339	AL001780
766	339 TT(1) = TFLD(7) - WBO(184)/D(2)	AL001790
767	IF (TT(1)) 341,340,340	AL001800
768	C	AL001810
769	C *CELL 1 ONLY*	AL001820
770	340 ACL(ILCASE+720) = (TT(1) + TFLD(9))/TFLD(5)	AL001830
771	GO TO 370	AL001840
772	C	AL001850
773	C *CELL 1 AT ZERO FUEL. TEST CELL 2*	AL001860
774	341 TT(2) = TT(1)	AL001870
775	TT(1) = DC(3)	AL001880
776	IF (WBO(192)) 340,340,342	AL001890
777	342 IF (TFLD(8)) 340,340,343	AL001900
778	C	AL001910
779	C *EXPEND FUEL FROM CELL 2. TT(2) = AMOUNT TO BE EXPENDED	AL001920
780	343 TT(2) = TT(2) + TFLD(8)	AL001930

```
CARD NO   ****                    CONTENTS                         ****
             IF (TT(2)) 344,345,345                             AL001940
        344  TT(2) = DC(3)                                      AL001950
        345  ACL(ILCASE+740) = (TT(2) + TFLD(10))/TFLD(8)       AL001960
             GO TO 340                                          AL001970
       C                                                        AL001980
       C              *SEQUENCE=2,1.  CHECK FOR FUEL IN CELL 2* AL001990
        346  IF (WBO(192)) 330,330,347                          AL002000
        347  IF (TFLD(8)) 330,330,348                           AL002010
        348  TT(2) = TFLD(8) - WBO(184)/D(2)                    AL002020
             IF (TT(2)) 349,336,336                             AL002030
        349  TT(1) = TT(2)                                      AL002040
             TT(2) = DC(3)                                      AL002050
       C                                                        AL002060
       C              *TEST CELL 1*                             AL002070
             IF (TFLD(7)) 336,336,350                           AL002080
        350  TT(1) = TT(1) - TFLD(7)                            AL002090
             IF (TT(1)) 351,345,345                             AL002100
        351  TT(1) = DC(3)                                      AL002110
             GO TO 345                                          AL002120
       C                                                        AL002130
       C                                                        AL002500
       C           ***CHECK NO OF CASES BEFORE LOOP***          AL002510
       C              *SETUP L  CASE MAX*                       AL002520
        370  IF (ILCASE - 20) 379,380,380                       AL002530
       C                                                        AL002540
        379 IF (VTID) 3790,3790,3800                            AL002550
       3800 IF (VERT) 3790,3790,3805                            AL002551
       3805 VERT = 0.0                                          AL002552
             ILCASE = ILCASE + ND(1)                            AL002553
             IF ( ILCASE-20) 3792,3792,380                      AL002554
       3792 DO 3791 I = 1,11                                    AL002555
             J = ND(4)*I - ND(3)                                AL002556
             WBO(J+31)=-WBO(J+31)                               AL002557
             WBO(J+32)=-WBO(J+32)                               AL002558
       3791 WBO(J+33)=-WBO(J+33)                                AL002559
             GO TO 325
       3790 LPREV = ILCASE* 33 - 32                             AL002561
       C                                                        AL002560
       C                                                        AL003000
       C           ***SAVE ACL ARRAY ON RCD 30***               AL003010
        380  CALL WRITMS (1,ACL(1),900,30)                      AL003020
       C                                                        AL003030
       C              **SETUP TEMP(1-20.**                      AL003040
             DO 381 I=1,20                                      AL003050
             TEMP(I) = ACL(I+880)                               AL003060
        381  CONTINUE                                           AL003070
       C                                                        AL003080
       C                                                        AL003090
       C           ***TEST FOR PRINT--IP 19***                  AL003100
       C              *PRINT DESIGN DATA SUMMARY*               AL003110
             IF (IP(19)) 382,382,390                            AL003120
        382 NPAGE = NPAGE + ND(1)                               AL003130
             WRITE (6,383)NCASE,NPAGE                           AL003140
        383 FORMAT (10H1     CASEI4,T25,58H-**-BASIC LIMIT AIRLOAD DATA--ADV CAL003150
            1COMPOSITE ANALYSIS-**-,T100,4HPAGE,I4,//100H0  COND       TOOM     AL003160
            2   DOM    DEL-FL    DEL-UL    NZ     TEMP    ROM    RFL1    RFLAL003170
            32    RCOL1   RCOL2 )                               AL003180
        384  FORMAT (F9.1,2F11.1,2F10.1,F8.3,F8.1,9F8.4)        AL003190
       C                                                        AL003200
             DO 385 N=1,ILCASE                                  AL003210
             WRITE (6,384)ACL(N+840),ACL(N+800),ACL(N+820),ACL(N+860),ACL(N+880AL003220
            1),ACL(N+660),ACL(N+680),ACL(N+700),ACL(N+720),ACL(N+740),ACL(N+760AL003230
            2),ACL(N+780)                                       AL003240
        385  CONTINUE                                           AL003250
       C                                                        AL003260
       C           **TEST FOR PRINT OF PROCESSED LOADS--IP 20** AL003268
             IF (IP(20)) 386,386,390                            AL003270
        386  WRITE (6,387)                                      AL003280
        387  FORMAT (9H1       -**-DESIGN LOADS SUMMARY--ACL ARRAY--IP 20-**-,AL003290
            1/8H0 ACL )                                         AL003300
        388  FORMAT (1H I4,F11.1,F13.1,F12.1,F11.1,F13.1,F12.1) AL003310
```

```
CARD NO  ****                          CONTENTS                          ****
  052    C                                                                ALC03320
  053          DO 389 N=1,660,6                                           ALC03330
  054          K = N + ND(5)                                              ALC03340
  055          WRITE (6,388)N,(ACL(I),I=N,K,1)                            ALC03350
  056     389  CONTINUE                                                   ALC03360
  057    C                                                                ALC03370
  058    C              **EXIT**                                          ALC04990
  059     388  RETURN                                                     ALC04998
  060          END                                                        ALC04999
  061    C**********************************************************************
  062    C
  063    C       *****SUBROUTINE TEMPC*****
  064    C   ***MATERIAL PROPERTIES EVAL FOR ADV. COMP. MATERIALS***
  065    C
  066    C**********************************************************************
  067    C
  068    C**********************************************************************
  069    C
  070          SUBROUTINE TEMPC                                           TEMP0010
  071    C             **COMPOSITE MATL LAMINA PROPERTIES                  TEMP0020
  072    C
  073    C  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
  074    C  SUBROUTINE TO CALCULATE LAMINA PROPERTIES AND ALLOWABLES
  075    C  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
  076    C                                                                TEMP0030
  077          COMMON T(9100)                                             TEMP0040
  078          COMMON /IPRINT/ IP(80)
  079    C                                                                TEMP0050
  080          DIMENSION D(2060),CD(2000),ND(100),TM(900),CT(2040),TMT(400),   TEMP0060
  081         1ENH(6),ENP(9),                                             TEMP0081
  082         2PROP(7),TEMP(20),TC(5,7),G(20),                            TEMP0082
  083         3ENOC(6,4),TEIGJ(4),REFSTE(4),REFSTG(4),                    TEMP0083
  084         4CFMTL(5,3),FDMCY(20),FDMFE(20),FDMFG(20),                  TEMP0084
  085         5EBOT(20),
  086         6ENC(3),END(5,20),ENX(3,20)                                 TEMP0086
  087    C                                                                TEMP0070
  088          EQUIVALENCE (D(1),T(2061)),(CD(1),T(4121)),(ND(1),T(6121)),     TEMP0080
  089         1(TM(1),T(6221)),(CT(1),T(7121)),(TMT(1),CD(1101)),         TEMP0081
  090         2(ENP(1),D(1195)),(ENH(1),D(1184)),(TC(1,1),D(1170)),       TEMP0082
  091         3(TEMP(1),CT(2003)),(PROP(1),T(1300)),                      TEMP0083
  092         4(END(1,1),TM(601)),(ENX(1,1),TM(701)),                     TEMP0084
  093         5(ENC(1),CT(2043)),(G(1),CT(2023)),                         TEMP0085
  094         6(ENOC(1,1),TM(787)),(TEIGJ(1),TM(783)),                    TEMP0086
  095         7(REFSTE(1),TM(811)),(REFSTG(1),TM(815)),                   TEMP0087
  096         8(NCASE,ND(60)),                                            TEMP0088
  097         9(ILCASE,ND(41)),(ND(1),T(6121))                            TEMP0089
  098    C                                                                TEMP0090
  099          EQUIVALENCE (CFMTL(1,1),D(580)),(CFSHU,D(595)),(CFSCY,D(596)),  TEMP0100
  100         1(CFSE,ENH(2)),(CFSG,ENH(3)),                               TEMP0101
  101         2(ACCVID,D(431)),                                           TEMP0102
  102         3(EBOT(1),TM(819)),(PI,D(15)),
  103         9(FDMCY(1),TM(841)),(FDMFE(1),TM(861)),(FDMFG(1),TM(881))   TEMP0109
  104    C                                                                TEMP0110
  105          IF (ENP(5).GT.0.0)ENP(5)=-ENP(5)
  106    C
  107    C             **TEST FOR MATL PRINT--IP(18)**
  108     206  IF (IP(19)) 201,201,220
  109    C
  110     201  WRITE (6,202)NCASE
  111          WRITE (6,203)
  112     202  FORMAT (1H1     CASE,14,62H      ---TORQUE-BOX MATERIAL DATA--AD
  113         IV. COMPOSITE DESIGN---  ,6X,20H** TEMPC - IP(19) **)
  114    C
  115     203  FORMAT (6BH0  LOAD ID   TEMP.      EL         ET         GXY
  116         1NUXY      FTU        FCU        FSU )
  117     204  FORMAT (7X,I2,1X,F8.1,F12.1,2F11.1,F7.4,2F10.1,F9.1)
  118    C
  119     220  CONTINUE
  120    C
  121          DO 2 LCASE=1,ILCASE
  122          IF (TEMP(LCASE).NE.72.0) GO TO 6
```

```
CARD NO  ****                          CONTENTS                          ****
  923    C  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
  924    C  IF TEMP= 72 DEGREES, PROPERTIES ARE THOSE OF ROOM TEMPERATURE
  925    C
  926         DO 7 I=1,7
  927       7 PROP(I)=ENP(I)
  928         GO TO 8
  929       8 CONTINUE
  930    C  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
  931    C  INTERPOLATE TO FIND PROPERTIES
  932    C
  933         NL=INT(TEMP(LCASE)/100.)
  934         F=TEMP(LCASE)/100.-FLOAT(NL)
  935         NL=NL+1
  936         NU=NL+1
  937         DO 1 I=1,7
  938       1 PROP(I)=ENP(I)+(TC(NL,I)+F*(TC(NU,I)-TC(NL,I)))/100.
  939       8 CONTINUE
  940         G(LCASE)=PROP(3)
  941         XX=1.-PROP(4)**2*PROP(2)/PROP(1)
  942    C  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
  943    C  CALCULATE LAMINA PROPERTIES
  944    C
  945         END(1,LCASE)=PROP(1)/XX
  946         END(2,LCASE)=PROP(2)/XX
  947         END(3,LCASE)=PROP(4)*END(2,LCASE)
  948         END(4,LCASE)=.25*(END(1,LCASE)+END(2,LCASE)+2.*(END(3,LCASE)+2.*PR
  949        2OP(3)))
  950         END(5,LCASE)=.25*(END(1,LCASE)+END(2,LCASE)+2.*(END(3,LCASE)-2.*PR
  951        2OP(3)))
  952    C
  953    C  CALCULATE LAMINA ALLOWABLES
  954    C
  955         ENX(1,LCASE)=PROP(6)*2.*ENP(9)
  956         ENX(2,LCASE)=PROP(5)*2.*ENP(9)
  957         ENX(3,LCASE)=PROP(7)*4.*ENP(9)
  958    C
  959    C            ***BUCKLING CONSTANT FOR STR ***
  960         EBOT(LCASE) = PI/12.0*PI*(SQRT(  2(1,LCASE)*END(2,LCASE)) + END(3,
  961        1LCASE) + 2.0*G(LCASE))
  962    C
  963    C              *TEST PRINT*
  964         IF (IP(19)) 221,221,2
  965     221 WRITE (6,204)LCASE,TEMP(LCASE),(PROP(I),I=1,7)
  966    C
  967       2 CONTINUE
  968    C
  969    C  CALCULATE HONEYCOMB PROPERTIES
  970    C
  971         ENC(1)=2.*ENH(6)*ENH(1)/ENH(5)
  972         XX=ENC(1)/ENH(1)
  973         ENC(2)=2.13*XX**1.415 *ENH(2)
  974         IF(XX-.033)3,4,4
  975       3 ENC(3)=2.43*XX**1.54*ENH(3)
  976         GO TO 5
  977       4 ENC(3)=.4*XX*ENH(3)
  978       5 CONTINUE
  979    C
  980    C            **TEST PRINT OF ENC AND END ARRAYS**
  981         IF (IP(19)) 230,230,100
  982     230 WRITE (6,231)
  983     231 FORMAT (1140H0  LOAD ID     END(1)     END(2)    END(3)     END(4)
  984        1   END(5)      ENX(1)    ENX(2)    ENX(3)     EBOT)  )
  985     232 FORMAT (7X,I2,1X,F12.1,F11.1,F10.1,2F11.1,1X,3F10.1,F12.1)
  986    C
  987         DO 233 I=',ILCASE
  988         WRITE (6,232)I,END(1,I),END(2,I),END(3,I),END(4,I),END(5,I),ENX(I,
  989        1I),ENX(2,I),ENX(3,I),EBOT(I)
  990     233 CONTINUE
  991    C
  992    C
  993    C
```

```
CARD NO  ****                          CONTENTS                          ****
  994      C             **PRINT HEADINGS FOR REF TEMP DATA**
  995       240  WRITE (6,241)
  996      C
  997       241  FORMAT (62H0            ***-ENOC PROPERTIES FOR STIFFNESS CALCULATI
                 ONS-***-//11OH     ITEM     TEMP.       EL          GXY        ENOC
  999            2I)    ENOC(2)   ENOC(3)    ENOC(4)    ENOC(5)    ENOC(6) )
 1000      C
 1001       242  FORMAT (12H  ST. REF.  ,F7.1,3F12.1,F11.1,F10.1,3F11.1)
 1002       243  FORMAT (12H  FLUT. REF.,F7.1,3F12.1,F11.1,F10.1,3F11.1)
 1003       244  FORMAT (12H  FLUT/DPTH.,F7.1,3F12.1,F11.1,F10.1,3F11.1)
 1004       245  FORMAT (12H  FLEX/LOADS,F7.1,3F12.1,F11.1,F10.1,3F11.1)
 1005      C
 1006      C             ***CALC ENOC PROPERTIES FOR STIFFNESS CALC***
 1007       100  DO 109 N=1,4
 1008            DO 1000 I=1,6
 1009            ENOC(I,N) = 0.0
 1010       1000 CONTINUE
 1011      C
 1012            DO 101 I=1,7
 1013            PROP(I) = ENP(I)
 1014       101  CONTINUE
 1015      C
 1016            IF (TEIGJ(N)) 102,109,102
 1017       102  IF (TEIGJ(N) - 72.0) 103,105,103
 1018      C
 1019      C              **INTERPOLATE AT TEMP(N)**
 1020       103  NL = INT(TEIGJ(N)/100.0)
 1021            F = TEIGJ(N)/100.0 - FLOAT(NL)
 1022            NL = NL + 1
 1023            NU = NL + 1
 1024            DO 104 I=1,7
 1025            PROP(I) = ENP(I)+(TC(NL,I) + F*(TC(NU,I) - TC(NL,I)))/100.0
 1026       104  CONTINUE
 1027      C
 1028      C              **CALC ENOC(1-6) FOR EACH TEMP**
 1029       105  XX = 1.0 - PROP(4)**2*PROP(2)/PROP(1)
 1030            ENOC(1,N) = PROP(1)/XX
 1031            ENOC(2,N) = PROP(2)/XX
 1032            ENOC(3,N) = PROP(4)*ENOC(2,N)
 1033            ENOC(4,N) = 0.25*(ENOC(1,N) + ENOC(2,N) + 2.0*(ENOC(3,N) + 2.0*PRO
                P(3)))
 1035            ENOC(5,N) = 0.25*(ENOC(1,N) + ENOC(2,N) + 2.0*(ENOC(3,N) - 2.0*PRO
                P(3)))
 1037            ENOC(6,N) = 0.25*(ENOC(1,N) + ENOC(2,N) - 2.0* ENOC(3,N) )
 1038      C
 1039      C              **SAVE REF E AND G**
 1040            REFSTE(N) = PROP(1)
 1041            REFSTG(N) = PROP(3)
 1042      C
 1043      C              **TEST FOR ENCO PRINT**
 1044            IF (IP(19)) 2460,2460,109
 1045      C
 1046      C             ***PRINT OF ENOC PROPERTIES FOR STIFF CALC***
 1047       2460 IF (N - 2) 246,247,248
 1048       248  WRITE (6,242)TEIGJ(1),REFSTE(1),REFSTG(1),ENOC(1,1),ENOC(2,1),ENOC
                (3,1),ENOC(4,1),ENOC(5,1),ENOC(6,1)
 1050            GO TO 109
 1051      C
 1052       247  WRITE (6,243)TEIGJ(2),REFSTE(2),REFSTG(2),ENOC(1,2),ENOC(2,2),ENOC
                (3,2),ENOC(4,2),ENOC(5,2),ENOC(6,2)
 1054            GO TO 109
 1055      C
 1056       248  IF (N - 4) 249,250,250
 1057       249  WRITE (6,244)TEIGJ(3),REFSTE(3),REFSTG(3),ENOC(1,3),ENOC(2,3),ENOC
                (3,3),ENOC(4,3),ENOC(5,3),ENOC(6,3)
 1059            GO TO 109
 1060      C
 1061       250  WRITE (6,245)TEIGJ(4),REFSTE(4),REFSTG(4),ENOC(1,4),ENOC(2,4),ENOC
                (3,4),ENOC(4,4),ENOC(5,4),ENOC(6,4)
 1063      C
 1064       109  CONTINUE
```

```
CARD NO  ****                          CONTENTS                          ****

1065      C
1066      C          ***TEST ACCVID.  3=MC CORE E,G REQD AT 20 LOAD COND.***
1067           IF (3.0 - ACCVID) 260,260,2695
1068       260 DO 269 LCASE=1,NLCASE
1069           FDHCY(LCASE) = 0.0
1070           FDHFE(LCASE) = 0.0
1071           FDHFG(LCASE) = 0.
1072           IF (TEMP(LCASE)) 261,259,261
1073       261 PROP(1) = CFBE
1074           PROP(2) = CFBMU
1075           PROP(3) = CFBCY
1076           IF (TEMP(LCASE) - 72.0) 262,264,262
1077       262 NL = INT(TEMP(LCASE)/100.0)
1078           F = TEMP(LCASE)/100.0 - FLOAT(NL)
1079           NL = NL+1
1080           NU = NL + 1
1081           DO 263 I=1,3
1082           PROP(I) = PROP(I)*(CFMTL(NL,I)+F*(CFMTL(NU,I)-CFMTL(NL,I)))/100.0
1083       263 CONTINUE
1084      C
1085      C            **CALC FOIL G AND MOVE FOIL E AND FCY***
1086       264 FDHCY(LCASE) = PROP(3)
1087           FDHFE(LCASE) = PROP(1)
1088           FDHFG(LCASE) = PROP(1)/(2.0*(1.0 + PROP(2)))
1089       269 CONTINUE
1090      C
1091           WRITE (6,2690)
1092       2690 FORMAT (30H0     ***HONEYCOMB CORE PROPERTIES*** )
1093       2691 FORMAT (4X,I2,3E16.8)
1094           DO 2692 I=1,20
1095           WRITE (6,2691) I,FDHCY(I),FDHFE(I),FDHFG(I)
1096       2692 CONTINUE
1097      C
1098      C
1099       2695 RETURN
1100           END
1101      C*************************************************************************
1102      C
1103      C       *****SUBROUTINE AVLOAD*****
1104      C  ***NET ULTIMATE LOADS EVALUATION - ADV. COMP. ANALYSIS***
1105      C
1106      C*************************************************************************
1107      C
1108           SUBROUTINE AVLOAD                                          AVL00010
1109      C                                                               AVL00011
1110      C************COMPOSITE STRUCTURE ANALYSIS VERSION OF SUBR VLOAD********AVL00012
1111      C            ***REVISED TO EVALUATE UP TO 20 LOAD CASES***      AVL00013
1112      C                                                               AVL00014
1113      C                                                               VL000019
1114      C                                                               VL000020
1115      C            ***NET ULT DESIGN LOADS CALC SUBR***               VL000030
1116      C                                                               VL000040
1117      C            **LIS = TYPE OF LOAD SET ID***                     VL000050
1118      C              *1 = GROSS, CALC*                                VL000060
1119      C              *2 = GROSS, INPUT*                               VL000070
1120      C              *3 = INPUT, NET*                                 VL000080
1121      C                                                               VL000090
1122      C                                                               VL000100
1123      C                                                               VL000150
1124           COMMON T(2060),D(23E3),CD(2000),ND(100),TM(900),CT(204)    AVL00160
1125           COMMON /IPRINT/ IP(80)                                     VL000161
1126      C                                                               VL000170
1127           DIMENSION DC(100),TT(24),TSEC(300),                        VL000180
1128          1ALPV(11),ALPH(11),ALPT(11),ALNV(11),ALNH(11),ALNT(11),     VL000190
1129          2TDGN(10),ULTPT(11),ULTNT(11),                              VL000192
1130          3DNV(11),DNH(11),DNT(11),SDNV(11),SDNH(11),SDNT(11),        VL000193
1131          4UWFS(11),UVRS(11),CVFS(11),DVRS(11),                       VL000194
1132          5TDNV(11),TDNH(11),TDNT(11),                                VL000195
1133          6GJROD(11),DVFSRS(11),                                      VL000196
1134          8RLDS(132),                                                 VL000198
1135          9ULTPV(11),ULTPH(11),ULTNV(11),ULTNH(11)                    VL000199
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CARD NO  ****                        CONTENTS                              ****
      C                                                                   AVL00...
          DIMENSION ACL(900),ACVMT(650),ACLT(66),
         1STHV(11),STHM(11),STHT(11),                                     ...01
         2FLV1(11),FLM1(11),FLT1(11),FLV2(11),FLM2(11),FLT2(11),
         3COLV1(11),COLM1(11),COLT1(11),COLV2(11),COLM2(11),COLT2(11),
         9COL.3(11),COLM3(11),COLT3(11)                                   AVL00209
      C                                                                   AVL00210
      C                                                                   VL000210
          EQUIVALENCE (DC(1),D(1401)),(UPNZ,D(285)),(UPNZ,D(285)),        VL000220
         1(ULTLF,D(122)),(TT(1),T(1317)),(TSEC(1),CD(1501)),              VL000221
         2(ALPV(1),T(554)),(ALPM(1),T(565)),(ALPT(1),T(877)),(ALNV(1),T(570VL000222
         3)),(ALNM(1),T(567)),(ALNT(1),T(889)),(TDG(1),T(430)),           VL000223
         4(DHV(1),T(599)),(DHM(1),T(609)),(DHT(1),T(620)),                VL000224
         5(ULTPM(1),TSEC(1)),(ULTFV(1),TSEC(12)),(ULTNV(1),TSEC(111)),(ULTNMVL000225
         6(1),TSEC(122)),(GJROD(1),T(668)),(DGHI,T(22)),                  VL000226
         7(DGHR,TOGH(2)),(CDHK,TOGH(3)),(TBXX,TOGH(4)),                   VL000227
         8(NCASE,ND(60)),(NOOH,ND(  )),(IGH,ND(61)),(IOP1,ND(62)),        VL000228
         9(NPAGE,ND(85)),(LID,ND(59)),(N,ND(30)),(K,ND(31))               VL000229
      C                                                                   VL000230
          EQUIVALENCE (UVFS(1),TSEC(23)),(UVRS(1),TSEC(34)),              VL000240
         1(ULTPT(1),TSEC(144)),(ULTNT(1),TSEC(155)),                      VL000241
         2(SDHV(1),T(644)),(SDHM(1),T(655)),(SDHT(1),T(665)),             VL000242
         3(RLOS(1),CD(400)),                                              VL000243
         8(TDHV(1),CD(1968)),(TDHM(1),CD(1979)),(TDHT(1),CD(1530)),       VL000248
         9(DVFSRS(1),CD(1924)),(DVFS(1),D(642)),(DVRS(1),D(653))          VL000249
      C                                                                   VL000250
      C                                                                   AVL00240
          EQUIVALENCE (ACL(1),CT(1)),(ACVMT(1),CT(132)),(ACLT(1),CD(532)), AVL00250
         1(STHV(1),T(811)),(STHM(1),T(822)),(STHT(1),T(833)),             AVL00251
         2(FLV1(1),T(445)),(FLM1(1),T(456)),(FLT1(1),T(467)),             AVL00252
         3(FLV2(1),T(478)),(FLM2(1),T(409)),(FLT2(1),T(419)),             AVL00253
         4(COLV1(1),T(309)),(COLM1(1),T(320)),(COLT1(1),T(331)),          AVL00254
         5(COLV2(1),T(342)),(COLM2(1),T(353)),(COLT2(1),T(364)),          AVL00255
         6(COLV3(1),T(375)),(COLM3(1),T(325)),(COLT3(1),T(397)),          AVL00256
         7(TOGH(1),T(430)),(COLK3,TOGH(15)),                              AVL00257
         8(ILCASE,ND(41))                                                 AVL00259
      C                                                                   AVL00260
      C          ***CHECK BK PRINT***                                     VL000251
      C            *IP 25 FOR NOOH = 1 ONLY*                              VL000252
      C            *IP 24 FOR ALL NOOH*                                   VL000253
      C            *SET TT(3) TO 0 FOR NO PRINT, 1 FOR PRINT*             VL000254
       100  TT(3) = DC(3)                                                 VL000260
          IF(NOOH - ND(1))1000,1000,1001                                  VL000261
       1000 N = 25                                                        VL000265
          IF(IP(25)) 1003,1003,1002                                       VL000268
       1001 N = 24                                                        VL000270
       1002 IF(IP(24)) 1003,1003,1009                                     VL000271
       1003 TT(3) = D(1)                                                  VL000275
          NPAGE = NPAGE + ND(1)                                           VL000276
          WRITE(6,1004)NCASE,NPAGE,N,IGH,NOOH,IOP1,DGHI                   VL000280
          WRITE(6,1005)                                                   VL000285
      C                                                                   VL000289
       1004 FORMAT (1OH1     CASEI4,16X,48H-**-DESIGN LOADS/1000 AND REQD GJ/1VL000290
         1,000,000-**- ,20X,4HPAGEI4,/16H0           IP=I2,6H  IGH=I1,7H  NVL000291
         2OOH=I1,7H  IOP1=I1,6H  DGH=F9.1)                                VL000292
      C                                                                   VL000299
       1005 FORMAT (106H0  S/A   +V(ULT)    +M(ULT)   +T(ULT)  -V(ULT)   -M(ULVL000300
         1T)   -T(ULT)  VOH(IG)   MOH(IG)   TOH(IG)   GJ(REQD)  )         VL000301
      C                                                                   VL000302
       104  FORMAT (1H 3X,I2,F10.3,F11.2,F10.2,F9.3,F10.2,F10.2,F9.3,F10.2,F10VL000303
         1.2,F12.3)                                                       VL000304
      C                                                                   VL000309
       1009 DO 109 N=1,11                                                 VL000310
          K = ND(12) - N                                                  VL000315
          TT(1) = DC(3)                                                   VL000320
          TT(7) = DC(3)                                                   VL000325
          TT(2) = DC(3)                                                   VL000330
          IF (LID - ND(2)) 101,101,102                                    VL000340
      C                                                                   VL000350
      C            *PRINT ON TT(3)=1.0*                                   VL000351
      C          **SETUP INERTIA DATA**                                   VL000360
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CARD NO **** CONTENTS ****

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  101 TT(1) = DCHK*TEXK*DHV(N) + DCHK*SDV(N)                      VL000370
      TT(2) = DCHK*TEXK*DHM(N) + DCHK*SDM(N)                      VL000380
      TT(7) = DCHK*TEXK*DHT(N) + DCHK*SDT(N)                      VL000385
C                                                                 VL000389
  102 ULTPV(K) = ULTLF*DGHR*ALPV(N) - UPNZ*RLDS(N+66)*TT(1)       VL000390
C                                                                 VL000399
      ULTNV(K) = ULTLF*DGHR*ALNV(N) - UNNZ*RLDS(N+99)*TT(1)       VL000400
C                                                                 VL000409
      ULTPM(K) = ULTLF*DGHR*ALPM(N) - UPNZ*RLDS(N+77)*TT(2)       VL000410
C                                                                 VL000414
      ULTNM(K) = ULTLF*DGHR*ALNM(N) - UNNZ*RLDS(N+110)*TT(2)      VL000415
C                                                                 VL000419
      ULTPT(K) = ULTLF*DGHR*ALPT(N) - UPNZ*RLDS(N+89)*TT(7)       VL000420
C                                                                 VL000424
      ULTNT(K) = ULTLF*DGHR*ALNT(N) - UNNZ*RLDS(N+121)*TT(7)      VL000425
C                                                                 VL000429
C                FS/RS LOADS                                      VL000430
      UVFS(K) = ULTPV(K)*DVFS(N)*DVFSRS(N)                        VL000440
      UVRS(K) = ULTPV(K)*DVRS(N)*(DC(1) - DVFSRS(N))              VL000450
      IF (TT(3)) 109,109,103                                      VL000451
  103 TT(8) = ULTPV(K)/1000.0                                     VL000452
      TT(9) = ULTPM(K)/1000.0                                     VL000453
      TT(10)= ULTPT(K)/1000.0                                     VL000454
      TT(11)= ULTNV(K)/1000.0                                     VL000455
      TT(12)= ULTNM(K)/1000.0                                     VL000456
      TT(13)= ULTNT(K)/1000.0                                     VL000457
      TT(14)= TT(1)/1000.0                                        VL000458
      TT(15) = TT(2)/1000.0                                       VL000459
      TT(16) = TT(7)/1000.0                                       VL000460
      TT(17) = GJROD(N)/1000000.0                                 VL000461
      WRITE (6,104)N,(TT(I+7),I=1,10)                             VL000465
C                                                                 VL000470
      TDHV(N) = TT(1)                                             VL000473
      TDHM(N) = TT(2)                                             VL000474
      TDHT(N) = TT(7)                                             VL000475
C                                                                 VL000479
  109 CONTINUE                                                    VL000480
C                                                                 VL000490
C                                                                 AVL01000
C           ***SETUP LOADS ARRAY FOR ADV. COMP. ROUTINES***       AVL01010
C             *20 SETS OF LOADS--(V,M,T) X 11 EACH*               AVL01020
C             *DATA ON RCD 30.   NO OF LOADS=ILCASE*              AVL01030
  150 CALL READMS (1,ACL(1),900,30)                               AVL01040
C                                                                 AVL01041
C           ***SETUP PRINT ID FOR LOADS PROCESS LOOP**            AVL01042
C             *IP 25 FOR NOCH = 1 ONLY*                           AVL01043
C             *IP 24 FOR ALL NOCH*                                AVL01044
C             *SET NN=0 FOR NO PRINT, 1 FOR PRINT*                AVL01045
      NN = DC(3)                                                  AVL01046
      IF(NOCH - NO(1)) 1500,1500,1501                             AVL01047
 1500 IF (IP(25)) 1502,1502,1501                                  AVL01048
 1501 IF (IP(24)) 1502,1502,1509                                  AVL01049
 1502 NN = NO(1)                                                  AVL01050
C                                                                 AVL01054
 1509 DO 151 I=1,660                                              AVL01055
      ACVHT(I) = DC(3)                                            AVL01060
  151 CONTINUE                                                    AVL01070
C                                                                 AVL01080
      DO 159 N=1,ILCASE                                           AVL01090
      L = N*33 -33                                                AVL01100
      DO 152 I=1,33                                               AVL01110
      K = L + I                                                   AVL01120
      ACLT(I) = ACL(K)                                            AVL01130
  152 CONTINUE                                                    AVL01140
C                                                                 AVL01150
      DO 153 I=1,11                                               AVL01160
      ACLT(I+33) = ULTLF*(DGHR*ACLT(I) - ACL(N+700)*ACL(N+660)*DDHK*(TBXAVL01170
     1K*DHV(I) + STHV(I) + ACL(N+720)*FLV1(I) + ACL(N+740)*FLV2(I) + ACLAVL01180
     2(N+760)*CDLV1(I) + ACL(N+780)*CDLV2(I) + CDLK3*CDLV3(I))))   AVL01190
C                                                                 AVL01200
      ACLT(I+44) = ULTLF*(DGHR*ACLT(I+11) - ACL(N+700)*ACL(N+660)*DDHK*(AVL01210
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CARD NO **** CONTENTS ****

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     1TBXX*DWM(I) + STMM(I) + ACL(N+720)*FLM1(I) + ACL(N+740)*FLM2(I) + AVL01220
     2ACL(N+760)*CDLM1(I) + ACL(N+780)*CDLM2(I) + CDLK3*CDLM3(I)))       AVL01230
C                                                                        AVL01240
      ACLT(I+55) = ULTLF*(DGWR*ACLT(I+22) + ACL(N+700)*ACL(N+C60)*DGWR*(AVL01250
     1TBXX*DWT(I) + STMT(I) + ACL(N+720)*FLT1(I) + ACL(N+740)*FLT2(I) + AVL01260
     3ACL(N+760)*CDLT1(I) + ACL(N+780)*CDLT2(I) + CDLK3*CDLT3(I)))       AVL01270
C                                                                        AVL01280
  153 CONTINUE                                                           AVL01290
C                                                                        AVL01300
      DO 154 I=1,11                                                      AVL01310
      K = L + I*ND(3) - ND(2)                                            AVL01315
      ACVMT(K) = ACLT(I+33)                                              AVL01320
      ACVMT(K+1) = ACLT(I+44)                                            AVL01325
      ACVMT(K+2) = ACLT(I+55)                                            AVL01330
  154 CONTINUE                                                           AVL01340
C                                                                        AVL01350
C              ***TEST FOR PRINT OF CURRENT CONDITION***                 AVL01360
      IF (NN)  159,159,155                                               AVL01390
  155 WRITE (6,156)ACL(N+D40)                                            AVL01380
  156 FORMAT (14H0   COND. NO.F8.1,//85H0   STA     V(ULT)      M(ULT)AVL01390
     1        T(ULT)    STA     V(ULT)       M(ULT)       T(ULT))        AVL01400
  157 FORMAT (4X,I3,F11.1,F13.1,F12.1,4X,I3,F11.1,F13.1,F12.1)           AVL01410
 1570 FORMAT (4X,I3,F11.1,F13.1,F12.1)                                   AVL01420
C                                                                        AVL01430
      DO 158 I=1,10,2                                                    AVL01440
      L = I + ND(1)                                                      AVL01450
      WRITE (6,157)L,ACLT(I+33),ACLT(I+44),ACLT(I+55),L,ACLT(I+34),ACLT(AVL01460
     1I+45),ACLT(I+56)                                                   AVL01470
  158 CONTINUE                                                           AVL01480
C                                                                        AVL01490
      WRITE (6,1570)ND(1),ACLT(44),ACLT(55),ACLT(66)                     AVL01500
C                                                                        AVL01510
C              *LOOP FOR NEXT LOAD CONDITION*                            AVL01520
  159 CONTINUE                                                           AVL01530
C                                                                        AVL01540
C                                                                        VL001990
C          ***EXIT***                                                    VL001990
  199 RETURN                                                             VL001998
      END                                                                VL001999
C*********************************************************************
C
C        *****SUBROUTINE ACPROG*****
C   ***TOTAL SURFACE WEIGHT SYNTHESIS CONTROL - ADV. COMP. ANALYSIS***
C
C*********************************************************************
C
      SUBROUTINE ACPROG                                                  ACPR0010
C                                                                        PROG0020
C             **GENL CONTROL PROG FOR GW/DW PASSES***                    PROG0030
C                                                                        PROG0040
C                                                                        PROG0110
C                                                                        PROG0130
      COMMON T(2060),D(2050),CD(2000),ND(100),TN(900),CT(2048)           ACPR0140
      COMMON /MISC/XMISC(100)                                            PROG0141
C                                                                        PROG0150
      DIMENSION DC(100),TSEC(300),DGW(3),TOGW(3),TSS(100),TWT(400),      PROG0160
     1TT(24),DMTLB(17),TOGW(15),ULTPM(11),DWV(11),DWM(11),DWT(11),       PROG0161
     2YBUI(11),YBUD(11),YBLI(11),YBLD(11),                               PROG0162
     3DWMI(11),DSMI(11),DNXI(11),DEFFI(11),                              PROG0163
     4SDWV(11),SDWM(11),SDWT(11),DCDL1(8),DCNST3(22),TCNST(8),           PROG0164
     5AFDOW(8),FLV1(11),FLV2(11),FLM1(11),FLM2(11),FLT1(11),FLT2(11),    PROG0165
     6CDLV1(11),CDLV2(11),CDLV3(11),CDLM1(11),CDLM2(11),CDLM3(11),       PROG0166
     7CDLT1(11),CDLT2(11),CDLT3(11),STMV(11),STMM(11),STMT(11),          PROG0167
     8DCBST(11),DCNOS(11),DPCDL(10),SWT(11),                             PROG0168
     9WPNLS(11),TPNLW(11),TCHT(11),TBWPI(11),TWWPI(11),VFWPI(11)         PROG0169
     A,ACVFDL(11),ACVFDG(11)                                             PROG0169
     B,CTBW(150),TSC(420)                                                PROG0169
C                                                                        PROG0170
C                                                                        PROG0170
      DIMENSION TEMP(20),W(22),                                          ACPR0170
     1TEIGJ(4),                                                          ACPR0171
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CARD NO **** CONTENTS ****

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      2(NP(9),                                                        ACPR0172
      3RLDS(132),                                                     ACPR0173
      9TBO(1),TBH(1),GJROD(1))                                        ACPR0179
C                                                                     ACPR0180
       EQUIVALENCE (DC(1),D(1401)),(TSEC(1),CD(1501)),(TT(1),T(1317)), PROG0180
      1(DGH(1),D(1021)),(DGHO,D(105)),(DGHI,T(22)),(TDGH(1),D(80)),    PROG0181
      2(DKW,D(234)),(DKWO,D(369)),(DCNST3(1),D(1301)),(THT(1),CD(1101)),PROG0182
      3(TDGH(1),T(430)) (DGWRI,TDGH(1)),(DGHR,TDGH(2)),(TDXX,TDGH(4)), PROG0183
      4(RFL1,TDGH(11)),(RFL2,TDGH(12)),                                PROG0184
      5(CDLK1,TDGH(13)),(CDLK2,TDGH(14)),(CDLK3,TDGH(15)),             PROG0185
      6(IOPS,ND(83)),(IOPC,ND(84)),(IOP1,ND(82)),(IOPI,ND(74)),        PROG0186
      7(ISC,ND(22)),(ICD,ND(49)),(I,ND(26)),(N,ND(27)),(K,ND(29)),     PROG0187
      8(IF4,ND(93)),(IF8,ND(97)),(NOCT,ND(50)),                        PROG0188
      9(IGH,ND(61)),(IGT,ND(57)),(NODH,ND(56)),(NDXP,ND(25))           PROG0189
C                                                                     PROG0190
C                                                                     PROG0200
C                                                                     PROG0210
       EQUIVALENCE (YDUD(1),T(679)),(YDLD(1),T(690)),                 PROG0220
      1(DOPT,D(1365)),(DOPTP,D(1399)),(TSS(1),T(196)),                 PROG0221
      2(DCBST(1),D(765)),(DCNOS(1),D(776)),                            PROG0222
      3(DHV(1),T(598)),(DHM(1),T(609)),(DWT(1),T(620)),                PROG0223
      4(DHMI(1),T(701)),(DSHI(1),T(712)),                              PROG0224
      5(DNXI(1),T(7 3)),(DEFFI(1),T(800)),(ULTPM(1),TSEC(1)),          PROG0225
      6(FLV1(1),T(445)),(FLM1(1),T(456)),(FLT1(1),T(467)),             PROG0226
      7(FLV2(1),T(470)),(FLM2(1),T(408)),(FLT2(1),T(419)),             PROG0227
      8(SDHV(1),T(844)),(SDHM(1),T(855)),(SDHT(1),T(866)),             PROG0228
      9(YBUI(1),TSEC(133)),(YBLI(1),TSEC(188))                         PROG0229
C                                                                     PROG0230
       EQUIVALENCE (STHV(1),T(811)),(STHM(1),T(822)),(STHT(1),T(833)), PROG0240
      1(CDLV1(1),T(309)),(CDLM1(1),T(320)),(CDLT1(1),T(331)),          PROG0241
      2(CDLV2(1),T(342)),(CDLM2(1),T(353)),(CDLT2(1),T(364)),          PROG0242
      3(CDLV3(1),T(375)),(CDLM3(1),T(386)),(CDLT3(1),T(397)),          PROG0243
      4(RFDGH(1),T(522)),(DHTLB(1),T(201)),                            PROG0244
      5(SDRHO,THT(175)),(ERT,DHTLB(14)),(GRT,DHTLB(15)),               PROG0245
      6(DPCDL(1),T(220)),(SHT(1),T(734)),(TCNST(1),CD(1960)),          PROG0246
      7(WPNLS(1),T(645)),(TPNLW(1),T(656)),(TBCWT(1),T(789)),          PROG0247
      8(TBWPI(1),T(745)),(THWPI(1),T(778)),(VFWPI(1),T(756)),          PROG0248
      9(DCDL1(1),D(167))                                               PROG0249
      A,(ACVFDE(1),CD(1938)),(ACVFDG(1),CD(1949))                      PROG0249
      B,(DRHOO,CD(1937)),(DGVF,CD(1936)),(DEVF,CD(1935))               PROG0251
      C,(CTBH(1),T(1541)),(TSC(1),T(1541))                             PROG0252
C                                                                     PROG0260
       EQUIVALENCE (TEMP(1),CT(2003)),(H(1),CT(1981)),                ACPR0260
      1(TBD(1),T(530)),(TBH(1),T(542)),(GJROD(1),T(668)),              ACPR0261
      2(TEIOJ(1),TH(783)) (DTMPB,D(281)),(VFDTMP,T(196)),(DTMPFO,D(284)),ACPR0262
      3(DTMPFL,D(283)),(VF10,D(251)),(DINID,D(271)),                   ACPR0263
      4(ENP(1),D(1155)),                                               ACPR0264
      5(RLCS(1),CD(400)),                                              ACPR0265
      6(STWFN,D(361)),(CNSID,D(461)),                                  ACPR0266
      7(ACID,D(430)),(DBRHO,D(464)),(ACCVID,D(431)),                   ACPR0267
      8(XLCASE,CT(2046)),                                              ACPR0268
      9(ILCASE,ND(41))                                                 ACPR0269
C                                                                     ACPR0300
C             ***SETUP DATA FOR ADV. COMPOSITE DESIGN***              ACPR0310
  500 XLCASE = D(2)                                                   ACPR0320
      ILCASE = ND(2)                                                  ACPR0330
      DO 501 I=1,11                                                   ACPR0340
      N = ND(2)*I - ND(1)                                             ACPR0350
      W(N) = TBH(I)                                                   ACPR0360
      W(N+1) = TBD(I)                                                 ACPR0370
  501 CONTINUE                                                        ACPR0400
C                                                                     ACPR0401
C               *SETUP LOAD TEMP(1,2)*                                ACPR0402
      TEMP(1)   DHTLB(1)                                              ACPR0405
      TEMP(2)   PHTLB(1)                                              ACPR0406
C                                                                     ACPR0409
C           ***SETUP TEIOJ ARRAY DATA--TEMP FOR EI.OJ CALC FOR--      ACPR0410
C            **1.  BASE STIFFNESS OUTPUT DATA**                       ACPR0411
C            **2.  CRITICAL FLUTTER PT ANALYSIS**                     ACPR0412
C            **3.  OUTPUT EI/OJ FOR FLUTTER IPT. ANALYSIS**           ACPR0413
C            **4.  OUTPUT EI/GJ FOR FLEX LOADS ANALYSIS**             ACPR0414
```

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CARD NO  ****                          CONTENTS                          ****
1420     C                                                                ACPR0415
1421     C              *ITEM 1.  IF INPUT TEMP=0, PROG WILL USE D(253) DATA*  ACPR0416
1422     C                                                                ACPR0416
1423     C             **ITEM 2.  IF CALC OR INPUT GJ, VF TEMP HAS BEEN SETUP  ACPR0416
1424     C              *     AND STORED IN VFDTMP=T(1950)**              ACPR0416
1425     C                                                                ACPR0417
1426     C             **ITEMS 3,4.  IF INPUT TEMP=0, AND DATA IS TO BE CALC,  ACPR0417
1427     C              *     PROG WILL USE TEMP FOR ITEM 1 ABOVE*        ACPR0418
1428     C                                                                ACPR0419
1429      503  DO 5030 I=1,3                                              ACPR0420
1430           TEIGJ(I+1) = DC(3)                                         ACPR0421
1431      5030 CONTINUE                                                   ACPR0422
1432           TEIGJ(1) = DTMPB                                           ACPR0423
1433           IF (DTMPB) 5031,5031,5032                                  ACPR0424
1434      5031 TEIGJ(1) = DATL0(1)                                        ACPR0425
1435      5032 IF (VFID) 5035,5035,5033                                   ACPR0426
1436      5033 TEIGJ(2) = VFDTMP                                          ACPR0427
1437     C                                                                ACPR0429
1438     C                                                                ACPR0430
1439     C              **FLUTTER IPT/FLUX LDS**                          ACPR0431
1440     C               *ID=0,1,2,3  0=NO, 1,3=FLUT/OPT, 1,2=F/LODS*     ACPR0431
1441      5035 IF (DINID) 505,505,5036                                    ACPR0432
1442      5036 IF (DINID - D(21)) 5037,5039,5037                          ACPR0433
1443      5037 TEIGJ(3) = DTMPFO                                          ACPR0434
1444           IF (DTMPFO) 5038,5038,5039                                 ACPR0435
1445      5038 TEIGJ(3) = TEIGJ(1)                                        ACPR0436
1446      5039 IF (DINID - D(2)) 5040,5040,505                            ACPR0437
1447      5040 TEIGJ(4) = DTMPFL                                          ACPR0438
1448           IF (DTMPFL) 5041,5041,505                                  ACPR0439
1449      5041 TEIGJ(4) = TEIGJ(1)                                        ACPR0440
1450     C                                                                ACPR0441
1451     C                                                                PROG0448
1452     C              ***SETUP LOADS FOR COMPOSITE ANALYSIS***          PROG0449
1453      505  CALL ACLOAD                                               ACPR0450
1454     C               **SAVE RLDS ARRAY ON RCD 39**                    ACPR0455
1455           CALL WRITMS (1,RLDS(1),132,39)                             ACPR0456
1456     C                                                                PROG0458
1457     C              ***ADV. COMP. MATL PROP***                        ACPR0460
1458           CALL TEMPC                                                 ACPR0470
1459     C                                                                ACPR0471
1460     C               **CLEAR T(920-1340)**                            ACPR0472
1461           DO 506 I=1,421                                             ACPR0473
1462           T(I+919) = DC(3)                                           ACPR0474
1463      506  CONTINUE                                                  ACPR0475
1464     C                                                                ACPR0479
1465     C                                                                ACPR0480
1466     C              ***SETUP TWT ARRAY CONSTANTS                      ACPR0490
1467           SORHO = ENP(8)                                             ACPR0500
1468           TWT(185) = D(1)                                            ACPR0510
1469           DO 507 I=1,8                                               ACPR0520
1470           TWT(I+175) = D(1)                                          ACPR0530
1471      507  CONTINUE                                                  ACPR0540
1472           TWT(183) = D(1)                                            ACPR0550
1473           TWT(184) = D(1)                                            ACPR0560
1474     C                                                                ACPR0570
1475     C              ***SET INPUT COND MT TO LB/SQ IN***               PROG0580
1476           DBRHO = DBRHO/D(17)                                        PROG0590
1477     C                                                                PROG0600
1478     C                                                                PROG0320
1479     C              ***SETUP DM PASSES. MAX=5***                      PROG0330
1480      100  NDMP = IFIX(DMND)                                         PROG0340
1481           IF (ND(5) - NDMP) 101,102,102                              PROG0350
1482      101  NDMP = ND(5)                                              PROG0360
1483     C                                                                PROG0370
1484     C                                                                PROG0512
1485     C               *CLEAR 184-189, 100/RCD*                         PROG0513
1486      102  DO 105 N=1,6                                              PROG0514
1487           IF4 = N + 183                                              PROG0515
1488           CALL WRITMS (1,CD(1),100,IF4)                              PROG0516
1489      105  CONTINUE                                                  PROG0517
1490     C                                                                PROG0518
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```
CARD NO  ****                          CONTENTS                          ****
         C              ***SAVE D 375,376,377,378,380,381,382)****      PROG0519
          150 DO 151 I=1,4                                               PROG0520
              TCNST(I) = D(I+374)                                        PROG0530
              TCNST(I+4) = D(I+379)                                      PROG0540
          151 CONTINUE                                                   PROG0550
         C                                                               PROG0570
         C                                                               PROG0850
         C          *****SETUP FOR 3 GW. CALC. GW 3 TO 1 TO 2.*****      PROG0860
          200 IGW = ND(3)                                                PROG0870
              NODW = NOWP + ND(1)                                        PROG0880
              IF (TOGW(3)) 2000,2000,210                                 PROG0881
         C                                                               PROG0882
         C              ***TOGW(3)=0.  TEST TOGW(1)***                   PROG0883
         2000 IGW = ND(1)                                                PROG0885
              IF (TOGW(1)) 2001,2001,210                                 PROG0886
         C                                                               PROG0883
         C              ***TOGW(3 AND 1)=0.  TEST TOGW(2)***             PROG0889
         2001 IGW = ND(2)                                                PROG0890
              IF (TOGW(2)) 400,400,210                                   PROG0895
         C                                                               PROG0909
         C              ***TOGW(3) NOT ZERO.  DO TOGW(1)***              PROG0910
          201 IGW = ND(1)                                                PROG0920
              IF (TOGW(1)) 202,202,203                                   PROG0930
         C                                                               PROG0940
         C              ***TOGW(3 OR 1) NOT ZERO.  DO TOGW(2)***         PROG0950
          202 IGW = ND(2)                                                PROL0960
              IF (TOGW(2)) 400,400,203                                   PROG0970
          203 NODW = NOWP                                                PROG0535
         C                                                               PROG0990
         C              ***BEGIN LOOP FOR DGW***                         PROG1000
          210 DGWI = DGW(IGW)                                            PROG1010
         C                                                               PROG1020
              IOT = IGW                                                  PROG1030
              DGWR = DGWI/DGWO*DKVL                                      PROG1040
              DGWR1 = DGWR - D(1)                                        PROG1050
         C                                                               PROG1060
         C               **SETUP TOTAL DW LESS BOX AT DGW(I)**           PROG1070
          211 RFL1 = RFDGW(IGW+1)                                        PROG1080
              RFL2 = RFDGW(IGW+5)                                        PROG1090
              COLK3 = D(1)                                               PROG1100
              COLK1 = D(1) - DCOL1(IGW+1)                                PROG1110
              COLK2 = D(1) - DCOL1(IGW+5)                                PROG1120
              DO 2110 I=1,11                                             PROG1130
              SDWV(I) = STWV(I) + RFL1*FLV1(I) + RFL2*FLV2(I) + COLK1*COLV1(I) +PROG1140
             1 COLK2*COLV2(I) + COLK3*COLV3(I)                           PROG1141
              SDWM(I) = STWM(I) + RFL1*FLM1(I) + RFL2*FLM2(I) + COLK1*COLM1(I) +PROG1150
             1 COLK2*COLM2(I) + COLK3*COLM3(I)                           PROG1151
              SDWT(I) = STWT(I) + RFL1*FLT1(I) + RFL2*FLT2(I) + COLK1*COLT1(I) +PROG1160
             1 COLK2*COLT2(I) + COLK3*COLT3(I)                           PROG1161
         2110 CONTINUE                                                   PROG1170
         C                                                               PROG1178
         C         ****DW ITERATION LOOP.  ADJUST DW AND Y(BAR)****      PROG1179
         C               ***SETUP RATIOS FROM RCD 39***                  PROG1179
          220 CALL READMS (1,RLDS(1),132,39)                             PROG1180
              CALL DWYBA                                                 PROG1185
         C                                                               PROG1189
         C               ****  TEST FOR CONST. BY GW  ***                PROG1190
              IF (DCNST3(1)) 230,230,223                                 PROG1200
          223 D(375) = DCNST3(IGW+1)                                     PROG1210
              D(376) = DCNST3(IGW+4)                                     PROG1220
              D(377) = DCNST3(IGW+7)                                     PROG1230
              D(378) = DCNST3(IGW+10)                                    PROG1240
              D(380) = DCNST3(IGW+13)                                    PROG1250
              D(381) = DCNST3(IGW+16)                                    PROG1260
              D(382) = DCNST3(IGW+19)                                    PROG1270
         C                                                               PROG1280
         C                                                               PROG1350
         C              ***NET LOADS AND DESIGN DATA***                  PROG1360
          230 CALL AVLOAD                                                ACPR1370
         C                                                               ACPR1380
         C                                                               ACPR0390
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CARD NO  ****                          CONTENTS                          ****
1562     C              *CLEAR CT(1-1320)*                                ACPR0400
1563           DO 231 I=1,1320                                            ACPR0410
1564           CT(I) = DC(3)                                              ACPR0420
1565      231  CONTINUE                                                   ACPR0430
1566     C                                                                 ACPR0440
1567     C                                                                 PROG1460
1568     C          *****START DESIGN/SYNTHESIS*****                       PROG1470
1569      240  CALL ATBOPT                                                PROG1480
1570     C                                                                 PROG1520
1571     C            ***SAVE ASSUMED MH(LT) AND DMV DATA FOR ITERATION***  PROG1530
1572     C              *ORDER ROOT-TIP*                                   PROG1540
1573      250  DO 251 I=1,11                                              PROG1550
1574           N = ND(12) - I                                             PROG1560
1575           DMH1(I) = DMH(I)                                           PROG1570
1576           DBH1(I) = ULTPM(N)                                         PROG1580
1577      251  CONTINUE                                                   PROG1590
1578     C                                                                 PROG1600
1579     C            ***DW(V,H) FOR DESIGNED DATA***                      PROG1610
1580     C            ***SET K=1 FOR DEADWEIGHT PRINT BY SUBR DEADW***     PROG1611
1581      260  K = ND(1)                                                  PROG1620
1582           CALL DEADW                                                 PROG1625
1583     C                                                                 PROG1630
1584     C          ****TEST FOR NEXT DW PASS****                          PROG1640
1585      270  NODW = NODW - ND(1)                                        PROG1650
1586           DOARI = DC(3)                                              PROG1660
1587           IF (NODW) 280,280,220                                      PROG1661
1588     C                                                                 PROG1668
1589     C            ***SETUP DESIGN DATA FOR OUTPUT PROCESS***           PROG1669
1590      280  DRHOO = SDRHO                                              PROG1670
1591           DEWF = TWT(173)                                            PROG1671
1592           DGWF = TWT(174)                                            PROG1672
1593           DO 281 I=1,11                                              PROG1675
1594           ACWFDE(I) = CD(I+297)                                      PROG1676
1595           ACWFDG(I) = CD(I+286)                                      PROG1677
1596      281  CONTINUE                                                   PROG1678
1597     C                                                                 PROG1679
1598     C                                                                 PROG1682
1599     C            ***SAVE WT/DESIGN DATA FOR WDATA/TDFWI SUBR.         PROG1683
1600     C             **CTBW ARRAY ITEMS STORED RT-TIP**                  PROG1684
1601     C              *1.  11-Z(BOX WT/IN.-ST).  2. 11 BOX CHORDWISE ST. ITEMSPROG1685
1602     C              *3. 11 EI.  4. 11 GJ.  5. DESIGN E,G,RHO.          PROG1687
1603     C              *6.  10-BC  PNL WTS-ST.  7.  10-RECD COV DIST. WTS. PROG1688
1604     C              *8.  10-T/L DELTA COL F' WTS.  9.  11-MISC WT/IN.   PROG1689
1605     C              *10. .1-VF WT/IN.                                  PROG1690
1606     C              *11. TOTAL WT SUMMARY DATA--TWT(40-52) (SWT ARRAY)* PROG1691
1607     C               *12.  11-MATL E.  13.  11-MATL G*                 PROG1692
1608     C            ***RCD 156,157,158--150 CELLS/RCD***                 PROG1693
1609     C              *USE CTBW+ TEMP SCRATCH LOC AT TSC(1-150)*          PROG1694
1610     C                                                                 PROG1699
1611           DO 283 I=1,11                                              PROG1680
1612           CTBW(I) = TBWPI(I)                                         PROG1681
1613           CTBW(I+11) = TBCWT(I)                                      PROG1682
1614           CTBW(I+22) = CD(I+275)                                     PROG1683
1615           CTBW(I+33) = CD(I+264)                                     PROG1684
1616           CTBW(I+77) = TWBPI(I)                                      PROG1685
1617           CTBW(I+88) = VFWPI(I)                                      PROG1686
1618           CTBW(I+99) = SWT(I)                                        PROG1687
1619           CTBW(I+110) = ACWFDE(I)                                    PROG1688
1620           CTBW(I+121) = ACWFDG(I)                                    PROG1689
1621           IF (I - ND(10)) 282,282,283                                PROG1690
1622      282  CTBW(I+47) = WPNLS(I)                                      PROG1691
1623           CTBW(I+57) = TPNLW(I)                                      PROG1692
1624           CTBW(I+67) = DPCOL(I)                                      PROG1693
1625      283  CONTINUE                                                   PROG1694
1626           CTBW(45) = DEWF                                            PROG1695
1627           CTBW(46) = DGWF                                            PROG1696
1628           CTBW(47) = DRHOO                                           PROG1697
1629     C                                                                 PROG1698
1630           IFB = IBW + 155                                            PROG1699
1631           CALL WRITMS (1,CTBW(1),150,IFB)                            PROG1700
1632     C                                                                 ACPR1710
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CARD NO  ****                          CONTENTS                          ****
 1633    C                                                                ACPRI720
 1634    C            ***SAVE STIFFNESS DATA CD(I=400) IN RCD 13,14,15***  ACPRI730
 1635          IF0 = IGW + 12                                             ACPRI740
 1636          CALL WRITMS (1,CD(1),400,IF0)                              ACPRI750
 1637    C                                                                ACPRI760
 1638    C            ***TEST FOR NEXT GW***                              ACPRI770
 1639    C                                                                ACPRI780
 1640          IF (ND(2) - IGW) 201,400,202                               ACPRI790
 1641    C                                                                ACPRI800
 1642    C                                                                PROG3000
 1643    C             **END OF CALC. RESET DATA AND EXIT**               PROG3010
 1644     400  DO 401 I=1,4                                              PROG3020
 1645          D(I+378) = TCNST(I)                                        PROG3030
 1646          D(I+379) = TCNST(I+4)                                      PROG3040
 1647     401  CONTINUE                                                   PROG3050
 1648    C                                                                PROG3080
 1649    C            ***RESET BOND WT LB/SQ FT***                        PROG3090
 1650          DBRHO = DGRHO*D(17)                                        PROG3100
 1651    C                                                                PROG3110
 1652    C                                                                PROG3990
 1653          RETURN                                                     PROG3330
 1654          END                                                        PROG3999
 1655    C*************************************************************.****
 1656    C
 1657    C        *****SUBROUTINE CKSTAB*****
 1658    C   ***COMP/SHEOR STABILITY CHECK FOR ADV. COMP. PANELS***
 1659    C
 1660    C*****************************************************************.****
 1661    C
 1662          SUBROUTINE CKSTAB(R,B,L,M,N,NXP,NXY,FACT,FCRC,FCRS,LCASE,TCMPNL)
 1663    C
 1664    C  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
 1665    C  SUBROUTINE TO CHECK STABILITY OF A.C., CIRCULAR CORRUGATED AND
 1666    C          HONEYCOMB PANNELS UNDER INPLANE COMPRESSION AND SHEAR
 1667    C  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
 1668    C
 1669    C                                                                CKST0020
 1670    C                                                                CKST0030
 1671          COMMON T(9168)                                             CKST0040
 1672    C                                                                CKST0050
 1673          DIMENSION D(2060),CD(2000),ND(100),TH(900),CT(2048),       CKST0060
 1674         1ENP(9),ENH(6),                                             CKST0061
 1675         2ENO(5,20),ENC(3),                                          CKST0062
 1676         3APRTID(12),                                                CKST0063
 1677         9G(20)                                                      CKST0069
 1678    C                                                                CKST0070
 1679          EQUIVALENCE (D(1),T(2061)),(CD(1),T(4121)),(ND(1),T(6121)),CKST0080
 1680         1(TH(1),T(6221)),(CT(1),T(7121)),                           CKST0081
 1681         2(ENP(1),D(1155)),(ENH(1),D(1196)),                         CKST0082
 1682         3(ENC(1),CT(2043)),(ENO(1,1),TH(601)),                      CKST0083
 1683         8(APRTID(1),T(1070)),(NMAX,ND(3)),(NSTAT,ND(55)),           CKST0084
 1684         9(G(1),CT(2023))                                            CKST0089
 1685    C                                                                CKST0090
 1686    C
 1687    C
 1688          REAL NOP
 1689          REAL      KV,NUXY,KT,L,M,N,NX,NXY,NXCR,NXYCR
 1690    C
 1691          NX=NOP
 1692          D66 = 0.0
 1693          KV = 0.0
 1694          KT = 0.0
 1695    C
 1696    C
 1697          IF (NX.LT.0.0) NX=0.0
 1698          IF (FACT .GE. 2. ) GO TO 7
 1699    C  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
 1700    C  ADVANCED COMPOSITE FLAT AND CORRUGATED PANNELS
 1701    C
 1702          THICK= (L+2.*M+N) * ENP(9) * 2.0
 1703          XX=THICK**2*ENP(8)/8.
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```
CARD NO  ****                          CONTENTS                          ****
 1704            D11=(ENO(1,LCASE)*L+ENO(4,LCASE)*M*2.+ENO(2,LCASE)*N)*XX
 1705            D22=(ENO(2,LCASE)*L+ENO(4,LCASE)*M*2.+ENO(1,LCASE)*N)*XX
 1706      C
 1707      C     D12 IS EQUIVALENT TO (D12+2*D66). TERMS HAVE BEEN COMBINED INTO
 1708      C      D12
 1709      C
 1710            D66= G(LCASE)*(L*N) + 0.5*M*(ENO(1,LCASE)+ENO(2,LCASE)-2.*
 1711           (ENO(3,LCASE))
 1712            D12= (ENO(3,LCASE)*(L*N)+ENO(5,LCASE)*2.*M +2.*D66) *XX
 1713            IF (FACT-1.) 1,2,1
 1714      C
 1715      C  IF PANEL IS CORRUGATED, CORRECT FOR CORRUGATION
 1716      C
 1717          1 D12 = D12*FACT
 1718            D22 = D22/FACT
 1719      C
 1720      C     D11 = EX*IXX/(1-MUXY*MUYX)
 1721      C     IX = (R**1)*NT/2)*((3*A/SIN(A)-2*A*SIN(A)-3*SIN(A))
 1722      C     WHERE A IS CORRUGATION ANGLE AND ASSUMED TO BE 60 DEGREE
 1723      C     IN THIS SUBROUTINE
 1724      C
 1725            R = B/2.828N
 1726            IF ( R .GE. D(N04))  R = D(N04)
 1727            IF ( R .LT. D(N03))  R = D(N03)
 1728            D11 = (ENO(1,LCASE)*L +2.*M*ENO(4,LCASE) + ENO(2,LCASE)*N)*
 1729           (R**2 *0.31376*ENP(9)
 1730            NX=NX/FACT
 1731      C
 1732      C     COLUMN EQUATION SYMETRICAL LAYUPS ONLY
 1733      C
 1734            NXCR=9.869*D11/B**2
 1735            THETA=SQRT(D11*D22)/D12
 1736            GO TO 3
 1737          2 CONTINUE
 1738      C
 1739      C  CALCULATE INTERACTION
 1740      C
 1741            THETA=SQRT(D11*D22)/D12
 1742            NXCR=(19.739/(B*B))*(THETA+1.)*D12
 1743          3 CONTINUE
 1744            IF (THETA-1.) 4,4,5
 1745          4 NXYCR=(4./(B*B))*SQRT(D22*D12)*((THETA*.938+.582)*THETA+11.7)
 1746            GO TO 98
 1747          5 NXYCR=(4./(B*B))*SQRT(SQRT(D11*D22*D22*D22))*(8.125+5.05/THETA)
 1748            GO TO 98
 1749      C
 1750      C
 1751      C  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
 1752      C  HONEYCOMB SANDWITCH PANNEL
 1753      C
 1754          7 CONTINUE
 1755            TF=(L+2.*M+N)*ENP(9)
 1756            THICK = TF
 1757            XX = ENP(8) * (TCHPNL + TF ) **2 / 2.
 1758            D11=(ENO(1,LCASE)*L+ENO(4,LCASE)*M*2.+ENO(2,LCASE)*N)*XX
 1759            D22=(ENO(2,LCASE)*L+ENO(4,LCASE)*M*2.+ENO(1,LCASE)*N)*XX
 1760            D12=(ENO(3,LCASE)*(L*N)+ENO(5,LCASE)*M*2.)*XX
 1761            D66= (G(LCASE)*(L*N) + 0.5*M*(ENO(1,LCASE)+ENO(2,LCASE)-
 1762           12.*ENO(3,LCASE)))*XX
 1763      C
 1764      C     MUXY = MUXY POISSON RATIO
 1765      C
 1766            MUXY=(ENO(3,LCASE)*(L*N)+ENO(5,LCASE)*2.*M)/(ENO(2,LCASE)*L+ENO(1,
 1767           2LCASE)*N+ENO(4,LCASE)*2.*M)
 1768            Y=SQRT(D11*D22)
 1769            X=D12+2*D66
 1770            THETA=Y/X
 1771            B3=D66/Y
 1772            B1=SQRT(D22/D11)
 1773            B2=B1*MUXY+2.*B3
 1774            U=  ENO(3)*(TCHPNL + TF )
```

CARD NO **** CONTENTS ****

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      Z=9.653*Y (B**2*U)
      YY=1.-B3*Z
      KV=YY/(YY-4.*B1*Z)
      IF (THETA-1 ) 8,8,9
    8 FS = (4.*KV/B**2)*SQRT(D22*K1*((1.7+THETA*(0.532+2.93*THETA))
      GO TO 10
    9 FS = (4.*KV/B**2)*SQRT(SQRT(D11*D22**3)) *(8.125 +5.C2/THETA)
   10 CONTINUE
C
C  ITERATE TO FIND MINIMUM BUCKLING COEFFICENT
C
      IF (FACT .EQ.  2.5 )  GO TO 16
      NBR=0
C
C     ANC-23  RIGID CORE Z= 0.0, THEN KT = B1*C1+2.*B2+ 1/(C1*B1)
C     1ST DERIVATIVE OF KT WITH VARIABLE (C1*B1) GIVES
C     1.0 - 1/(C1*B1)**2 = 0.0
C     SO FOR THE 1ST ESTIMATE OF C1 IS 1./B1  FOR A MINIMUM
C
      C1 = 1./B1
      K1 = 2. + 2.*B2
      DELTA=.05
   17 OLD=KT
   11 A = 1.-B2**2 + B3*(B1*(C1 +2.*NUXY) +4.*B3 +1./(C1*B1))
      KT=(B1*C1+2.*(B1*NUXY+2.*B3)+1./(C1*B1)+A*Z*(1.+(1./C1))/(1.+(Z/C   6  53
     1(1+(B1*C1+B3*(1.+C1)+(1./B1)+Z*A))                                  8  59
      COMP=OLD-KT
      IF (COMP) 14,12,12
   12 ADD=-DELTA
      GO TO 13
   14 DELTA=DELTA*.5
      ADD=DELTA
   13 IF (ABS(COMP).LT..01*KT) GO TO 15
   18 C1=C1+ADD
      GO TO 17
   15 IF (NBR.EQ.1) GO TO 16
      NBR=1
      GO TO 18
C
   16  NXYCR = FS
      IF (FACT .EQ. 2. )  NXCR = KT*9.859*Y/B**2
C
C     COLUMN FIXITY IS ASSUMED TO BE PIN END  C = 1
C
      IF (FACT .EQ.  2.5 )  NXCR = (9.859*D11 /B**2) * (1./ (1. + 9.853*
     1(D11/B**2/U)))
C
C
C  CALCULATE INTERACTION
  98  RC = NX/NXCR
      RS = NXY/NXYCR
      RSSQ = RS*RS
      R = RC + RSSQ
C
      FCRC = NXCR
      FCRS = NXYCR
C
C
C             ***PRINT COMPONENT DETAILS ON APRTID(NSTAT) = 1***
      NMAX = NMAX + 1
 290  IF (APRTID(NSTAT)) 293,293,294
C
 294  WRITE (6,295)NSTAT,LCASE,NMAX,B,FACT
 295  FORMAT (1H0/,24H0  ***CKSTAB SUBR -- STA,I2,12H  LOAD CASE ,I2,8H
     1 PT NO=I4,5H  B=F6.2,8H  FACT= F4.2,5H*** )
 296  FORMAT (2X,3F6.1,F7.4,3X,2E15.8,3X,3E15.8,/30X,2E15.8,3X,3E15.8,/1
     12X,F15.6,3X,2E15.8,3X,3E15.8/12X,F8.6,3X,6E15.8)
C
      WRITE (6,296)L,M,N,THICK,NXP,NXY,D11,D12,D22,NXCR,NXYCR,THETA,XX,D
     166,R,RC,RS,RSSQ,KV,KT,NUXY,U,Y,B1,B2,B3,Z
C
```

CARD NO **** CONTENTS ****

```
      299  RETURN
           END
C*************************************************************************
C
C        *****SUBROUTINE ACHMS*****
C   ***H/SPAR, FDH TORQUE-BOX SYNTHESIS - ADV. COMP. ANALYSIS***
C
C*************************************************************************
C
      SUBROUTINE ACHMS                                                  ACMS0010
C             ***ADV. COMP. BOX SYNTHESIS--H/SPAR CONST***              ACMS0020
C
C            ****CONSTRUCTION ID--SKCODE****
C              **H/SPAR PLATE = 1 AND SPCODE = 1 OR 2**
C              **H/SPAR HC/PNL = 2 AND SPCODE = 1 OR 2**
C              **FULL DEPTH HONEYCOMB = 1 AND SPCODE = 3**
C
C                                                                       ACMS0030
      COMMON T(9168)                                                    ACMS0040
C                                                                       ACMS0050
      DIMENSION D(2060),CD(2000),ND(100),TH(900),CT(2040),              ACMS0060
     1ENP(9),ENH(6),                                                    ACMS0061
     2END(5,20),EIX(3,20),CNT(91),                                      ACMS0062
     3ENC(3),EL(15),ELW(12),XEL(10),WS(8),                              ACMS0063
     4P(20),WEIGH(11),SPCRUH(11),FCR(10,11),IEL(15,11),                 ACMS0064
     5DVFS(11),DVRS(11),DVFSRS(11),SLCFS(5),                            ACMS0065
     6TBFS(11),TBRS(11),YST(11),                                        ACMS0066
     7SPB(33),SPN(33),DCBST(11),DCNDS(11),WEIGP(10),                    ACMS0067
     8THICK(2),E11(2),SKLUO(33),SKLLO(33),                              ACMS0068
     9W(2,11),V(3,11,20),STRESS(6,11,20),CRLC(7,11)                     ACMS0069
     A,YBUI(11),YBLI(11)                                                ACMS0070
     B,DOP2(4),DOP3(4)                                                  ACMS0071
     C,APRTID(12)                                                       ACSTD072
     D,SWBCP(2),DNOU(11),DNOL(11)                                       ACMS0072
C                                                                       ACMS0079
      EQUIVALENCE (D(1),T(2061)),(CD(1),T(4121)),(ND(1),T(6121)),       ACMS0080
     1(TH(1),T(6221)),(CT(1),T(7121)),                                  ACMS0081
     2(ENP(1),D(1155)),(ENH(1),D(1164)),                                ACMS0082
     3(END(1,1),TH(601)),(EIX(1,1),TH(701)),(CNT(1),T(1541)),           ACMS0083
     4(ENC(1),CT(2041)),(EL(1),T(1300)),(WS(1),T(1315)),                ACMS0084
     5(ELW(1),T(1043)),(XEL(1),T(1323)),(WEIGP(1),T(1655)),             ACMS0085
     6(P(1),T(1098)),(WEIGH(1),T(1165)),(SPCRUH(1),T(1632)),            ACMS0086
     7(CRLC(1,1),T(1960)),(FCR(1,1),T(1100)),(IEL(1,1),TH(1)),          ACMS0087
     8(W(1,1),CT(1981)),(V(1,1,1),CT(1321)),(STRESS(1,1,1),CT(1)),      ACMS0088
     9(SPCODE,ND(43)),(SKCODE,ND(42)),(TYPE,ND(44)),(ILCASE,ND(41))     ACMS0089
C                                                                       ACMS0090
      EQUIVALENCE (BSMIN,CNT(5)),(BSMAX,CNT(6)),(XTYPE,CNT(10)),        ACMS0100
     1(C1,CNT(11)),(C2,CNT(12)),(C3,CNT(13)),(C4,CNT(14)),              ACMS0101
     2(DVFS(1),D(942)),(DVRS(1),D(853)),(DVFSRS(1),CD(1924)),           ACMS0102
     3 SLCFS(1),D(1470)),                                               ACMS0103
     4(TBFS(1),T(153)),(TBRS(1),T(165)),(YST(1),T(51))),                ACMS0104
     5(MS,CNT(24)),(MF,CNT(25)),(MR,CNT(26)),                           ACMS0105
     6(XFCODE,CNT(27)),(XRCODE,CNT(28)),                                ACMS0106
     7(SFCODE,ND(45)),(SRCODE,ND(46)),                                  ACMS0107
     8(NSPMIN,CNT(17)),(NSPMAX,CNT(18)),(XXCODE,CNT(19)),               ACMS0108
     9(XPCODE,CNT(20)),(NSPAR,CNT(21)),(C7,CNT(22))                     ACMS0109
C                                                                       ACMS0110
      EQUIVALENCE (ACSSID,D(1438)),                                     ACMS0120
     1(SPB(1),T(1232)),(SPN(1),T(1265)),(THICK(1),T(1916)),             ACMS0121
     2(DOP2(1),D(1367)),(DOP3(1),D(1371)),                              ACMS0122
     3(YBUI(1),T(679)),(YBLI(1),T(690)),                                ACMS0123
     5(ACDLN1,DOP2(3)),(ACDLN2,DOP2(4)),                                ACMS0125
     6(ACDLB1,DOP3(3)),(ACDLB2,DOP3(4)),                                ACMS0126
     7(TCPNLU,CNT(29)),(TCPNLL,CNT(30)),(TCPNLT,CNT(31)),               ACMS0127
     8(TCPNLF,CNT(32)),(TCPNLR,CNT(33)),                                ACMS0128
     9(DCBST(1),D(785)),(DCNDS(1),D(776 '                               ACMS0129
     A,(APRTID(1),T(1070)),(NMAX,ND(3))),(NSTAT,ND(55)),(ISEC,ND(62))   ACMS0130
     B,(SWBCP(1),D(923)),(DNOU(1),D(931))),(DNOL(1),D(942)              ACMS0131
     C,(SLUMIN,CNT(8)),(SLLMIN,CNT(9))                                  ACMS0132
     D,(SKLUO(1),CD(28)),(SKLLO(1),CD(29))                              ACMS0133
C                                                                       ACMS0140
```

```
CARD NO  ****                          CONTENTS                          ****
1917     C
1918     C
1919     C                                                                ACMS0130
1920           INTEGER FLAG
1921           INTEGER     SPCODE,SKCODE,TYPE
1922           INTEGER $FCODE,$RCODE
1923     C
1924           REAL NSPAR
1925           REAL NSPMIN,NSPMAX,IEL
1926     C
1927           SPCODE = XPCODE
1928           SKCODE = XKCODE
1929           TYPE = XTYPE
1930           $FCODE = XFCODE
1931           $RCODE = XRCODE
1932     C
1933     C            ***SETUP SEARCH DATA--TEST ID FOR TYPE OF DESIGN***
1934     C              *ID=D(4381)=ACSSID.  0=SEARCH, 1=INPUT B, 2=INPUT NOS*
1935     C              *IF SEARCH, USE TYPE AS CONTROL ID--1=CONST NOS, 2=B
1936     C
1937     C            ***FOR FDH SAVE CORE DATA IN SPB AND SPN ARRAYS***
1938     C              *INPUT NOS = CORE DENSITY IN LD/CU FT AT STA CUTS,
1939     C              *   IF THESE INPUT DENSITIES ARE DESIRED.*
1940     C              *          USE CALC DENSITY IF NO STA INPUTS*
1941     C
1942     C
1943           DO 300 I=1,22
1944           $PB(I) = 0.0
1945           $PN(I) = 0.0
1946      300  CONTINUE
1947     C
1948     C            ***INITIALIZE M-PLIES FOR UPPER AND LOWER SKINS***
1949           DO 3003 I=1,11
1950           $KLUD(I) = 1.0
1951           $KLLO(I) = 1.0
1952      3003 CONTINUE
1953     C
1954     C            ***TEST FOR FDH DESIGN***
1955           FLAG = 0.0
1956           IF (SPCODE - 2) 3004,3004,320
1957      3004 IF (ACSSID - D(1)) 305,301,303
1958     C
1959     C
1960     C              *INPUT B*
1961      301  DO 302 I=1,11
1962           $PB(I) = DCBST(I)
1963           $PN(I) = W(1,I)/$PB(I) + 1.0
1964      302  CONTINUE
1965           GO TO 350
1966     C
1967     C              *INPUT NOS*
1968      303  DO 304 I=1,11
1969           $PN(I) = DCNOS(I) + 2.0
1970           $PB(I) = W(1,I)/($PN(I) - 1.0)
1971      304  CONTINUE
1972           GO TO 350
1973     C
1974     C              *SEARCH--TEST TYPE OF ORIENTATION--CONST B OR NOS*
1975      305  FLAG = 1
1976           IF (TYPE - 2) 308,306,306
1977     C
1978     C              *CONST B -- SEARCH BMIN TO BMAX--NO ROUND ON NOS*
1979      306  DO 307 I=1,11
1980           $PB(I) = BSMIN
1981           $PN(I) = W(1,I)/$PB(I) + 1.0
1982      307  CONTINUE
1983           GO TO 350
1984     C
1985     C              *CONST NOS---SEARCH FROM NOSMAX TO NOSMIN*
1986      308  IF (NSPMIN - NSPMAX) 309,309,310
1987      309  FLAG = 0.0
```

CARD NO **** CONTENTS ****

```
1988      310  DO 311 I=1,11
1989           SPN(I) = NSPMAX + 2.0
1990           SPB(I) = W(1,1)/(NSPMAX + 1.0)
1991      311  CONTINUE
1992           GO TO 350
1993      C
1994      C            ***FULL DEPTH HONEYCOMB**TEST FOR INPUT CORE DENSITY**
1995      C              *INITIALIZE SPB(1-11) = 1.0 FOR CORE CRUCHING LOAD CALC
1996      C              *     SPB(12-22) = INITIAL CORE DENSITY, LB/CU IN
1997      C              *     SPB(23-33) = CORE COIL GAGE
1998      C              *     SPN(1-11) = INPUT/CALC CORE DENSITY, LB/CU FT
1999      C              *     SPN(12-22) = CORE CELL SIZE
2000      C             **SPN(23-33) WILL CONTAIN FINAL CORE DENSITY, LB/ CU IN
2001      C
2002      C             **FLAG HAS BEEN SET TO 0 FOR ONE PASS**
2003      320  DO 321 I=1,11
2004           SPB(I) = D(I)
2005           SPB(I+11) = ENC(I)
2006           SPB(I+22) = ENH(6)
2007           SPN(I) = ENC(I)*1728.0
2008           SPN(I+11) = ENH(5)
2009           SPN(I+22) = SPB(I+11)
2010      321  CONTINUE
2011      C
2012      C
2013           IF (ACSSID) 350,350,322
2014      C
2015      C              *INPUT DENSITY IN INPUT NOS ARRAY*
2016      322  DO 323 I=1,11
2017           SPN(I) = DCNOS(I)
2018           SPB(I+11) = SPN(I)/1728.0
2019           SPB(I+33) = SPB(I+11)*ENH(6)/ENC(I)
2020      323  CONTINUE
2021      C
2022      C
2023      C             ***INITIALIZE DATA***
2024      350  NB = 0.0
2025           DO 3500 I=1,12
2026           ELM(I) = 0.0
2027      3500 CONTINUE
2028      C
2029      C             ***PRINT CONSTANTS ON APRTID(12) = 1***
2030      3501 IF (APRTID(12)) 3503,3503,3502
2031      3502 WRITE (6,105)
2032           DO 109 K=1,38,5
2033           J = K + 4
2034           WRITE (6,1061)K,(CNT(KK),KK=K,J,1)
2035      109  CONTINUE
2036      C
2037           WRITE (6,102)(ENP(K),K=1,8)
2038      C
2039           WRITE (6,103)
2040           DO 107 K=1,100,5
2041           J = K + 4
2042           WRITE (6,106)K,(TH(KK+600),KK=K,J,1)
2043      107  CONTINUE
2044      C
2045           WRITE (6,104)
2046           DO 108 K=1,60,5
2047           J = K + 4
2048           WRITE (6,106)K,(TH(KK+700),KK=K,J,1)
2049      108  CONTINUE
2050      C
2051      3503 NMAX = 0.0
2052      C
2053      C
2054      C             ***SEARCH LOOP***
2055      C             *ANALYZE TIP TO ROOT***
2056         3 ELM(I) = 0.0
2057           SLUMIN = 1.0
2058           SLLMIN = 1.0
```

```
CARD NO  ****                          CONTENTS                          ****
 2059      C
 2060      C
 2061            DO 35 ISEC=1,11
 2062            NSTAT = 12 - ISEC
 2063      C
 2064            DO 4 I=1,6
 2065            CRLC(I,NSTAT) = 0.0
 2066            XEL(I) = 1.0
 2067          4 CONTINUE
 2068            CRLC(7,NSTAT) = 0.0
 2069            WIDE=W(1,NSTAT)
 2070      C
 2071      C            ***ESTIMATED EFFECTIVE DEPTHS = F(YBAR CO:ER)***
 2072      C             **WEB DEPTHS ASSUMED TO BE D-2*(DELTA YBAR)**
 2073      C              *MIN EFF DEPTH = 1.0 IN.*
 2074       351  DELCOV = YBOT(NSTAT) + YBL(NSTAT)
 2075            HI = W(2,NSTAT) - DELCOV
 2076            IF (HI - D(1)) 3511,3512,3512
 2077       3511 HI = D(1)
 2078       3512 HS = W(2,NSTAT) - 2.0*DELCOV
 2079            IF (HS - D(1)) 3513 3514,3514
 2080       3513 HS = D(1)
 2081       3514 HF = TBFS(NSTAT) - 2.0*DELCOV
 2082            IF (HF - D(1)) 3515,3516,3516
 2083       3515 HF = D(1)
 2084       3516 HR = TBRS(NSTAT) - 2.0*DELCOV
 2085            IF (HR - D(1)) 3517,3518,3518
 2086       3517 HR = D(1)
 2087      C
 2088      C            ***SETUP CONSTANTS (C1,C2,C4) 1-11***
 2089       3518 B = SPB(NSTAT)
 2090            NSPAR = SPN(NSTAT)
 2091            C1 = DVFS(NSTAT)*DVFSRS(NSTAT)/D(19)
 2092            C2 = DVRS(NSTAT)*(D(1) - DVFSRS(NSTAT))/D(19)
 2093            C4 = SLCFS(5)*(SLCFS(1) + SLCFS(2)) + SHOCP(1) + SHBCP(2) + C7*ISP
 2094           1AR/D(2)
 2095      C
 2096            DO 15 LCASE=1,ILCASE
 2097            WS(1)=V(2,NSTAT,LCASE)/(HI*(WIDE+C4))*DXDU(NSTAT)
 2098            WS(2)=-WS(1)*DNDL(NSTAT)/DNDU(NSTAT)
 2099            WS(3)=V(3,NSTAT,LCASE)/(2.*WIDE*HI)
 2100      C
 2101      C             **CHECK FOR FOH--NO SHEAR IN CORE**
 2102            IF (ND(3) - SPCODE) 352,352,3520
 2103       352  WS(8) = V(1,NSTAT,LCASE)/2.0
 2104            WS(4) = ABS(C1*WS(8)/HF + WS(3))
 2105            WS(5) = 0.0
 2106            WS(6) = ABS(C2*WS(8)/HR - WS(3))
 2107            GO TO 356
 2108      C
 2109      C             **M/SPAR**
 2110       3520 WS(8) = V(1,NSTAT,LCASE)/NSPAR
 2111            WS(5) = ABS(WS(8)/WS)
 2112            WS(7) = C1*WS(8)/HF
 2113            WS(4) = ABS(WS(7) + WS(3))
 2114            IF (WS(4) - ABS(WS(7))) 353,354,354
 2115       353  WS(4) = ABS(WS(7))
 2116       354  WS(7) = C2*WS(8)/HR
 2117            WS(6) = ABS(WS(7) - WS(3))
 2118            IF (WS(6) - ABS(WS(7))) 355,356,356
 2119       355  WS(6) = ABS(WS(7))
 2120      C
 2121       356  DO 8 I=1,8
 2122            STRESS(I,NSTAT,LCASE)=WS(I)
 2123          8 CONTINUE
 2124      C
 2125            IF (WS(1)) 9,11,10
 2126          9 EL(1)=WS(1)/ENX(2,LCASE)+C3
 2127            GO TO 11
 2128         10 EL(1)=WS(1)/ENX(1,LCASE)+C3
 2129         11 IF (WS(2))12,13,14
```

```
CARD NO  ****                          CONTENTS                          ****
   2130        12 EL(2)=WS(2)/EN(2,LCASE)+C3
   2131           GO TO 13
   2132        14 EL(2)=WS(2)/EN(1,LCASE)+C3
   2133        13 CONTINUE
   2134     C
   2135           DO 60 I=3,6
   2136           EL(I) = ABS(WS(I)/EN(3,LCASE)) + C3
   2137        60 CONTINUE
   2138     C
   2139           DO 159 I=1,6
   2140           IF (CRLC(I,NSTAT)) 150,150,151
   2141       150 CRLC(I,NSTAT) = LCASE
   2142       151 IF (EL(I),LE.XEL(I)) GO TO 159
   2143           XEL(I)=EL(I)
   2144           CRLC(I,NSTAT)=LCASE
   2145       159 CONTINUE
   2146     C
   2147        15 CONTINUE
   2148     C
   2149           DO 600 I=1,6
   2150           XEL(I) = INT(XEL(I))
   2151       600 CONTINUE
   2152     C
   2153           EL(1)=XEL(1)
   2154           EL(2)=XEL(3)
   2155           EL(4)=XEL(2)
   2156           EL(5)=EL(2)
   2157           EL(8)=XEL(4)
   2158           EL(7)=XEL(5)
   2159           EL(9)=XEL(6)
   2160     C
   2161     C            ***INITIAL EST OF M-PLIES = MAX OF -
   2162     C              *1.  STA(I) ST. M-PLIES*
   2163     C              *2.  STA(I-1) FINAL M-PLIES - 2*
   2164     C              *3.  PASS(J-1) STA(I) FINAL M-PLIES LESS 2*
   2165           XEL(7) = SLMIN - 2.0
   2166           XEL(8) = SLMIN - 2.0
   2167           IF (SLMIN - SKLLO(NSTAT)) 160,161,161
   2168       160 XEL(7) = SKLLO(NSTAT) - 2.0
   2169       161 IF (SLLMIN - SKLLO(NSTAT)) 162,163,163
   2170       162 XEL(8) = SKLLO(NSTAT) - 2.0
   2171       163 IF (EL(2) - XEL(7)) 164,165,165
   2172       164 EL(2) = XEL(7)
   2173       165 IF (EL(5) - XEL(8)) 166,167,167
   2174       166 EL(5) = XEL(8)
   2175       167 EL(3) = XN(1,2)
   2176           EL(6) = XN(4,5)
   2177     C
   2178     C            ***PRINT SECTION CNSTANTS ON APRTID(12) = 1***
   2179      1000 IF (APRTID(12)) 1009,1009,1001
   2180      1001 WRITE (6,100)(WS(K),K=1,8)
   2181     C
   2182       100 FORMAT (7H0   WS=,8E16.8,/7X,4E16.8)
   2183       101 FORMAT (7H0  XEL=,8E16.8)
   2184       102 FORMAT (7H0  EN=,5E16.8,/7X,4E16.8)
   2185     C
   2186       103 FORMAT (6H0  END)
   2187       104 FORMAT (6H0  EN)
   2188       105 FORMAT (6H0  CNT)
   2189     C
   2190       106 FORMAT (1H ,3X,13,5E16.8)
   2191     C
   2192           WRITE (6,101)(XEL(K),K=1,8)
   2193     C
   2194     C
   2195     C
   2196     C            ***START BOX DESIGN--TEST FOR H/SPAR OR FULL D/HC***
   2197      1009 IF (3 - SPCODE) 130,130,1300
   2198     C
   2199     C            ***FULL DEPTH HONEYCOMB DESIGN***
   2200     C             **CALL SUBR ACHFDH FOR UPR/LWR SKIN AND CORE DESIGN**
```

```
CARD NO  ****                          CONTENTS                          ****
 2201      130  CALL ACHFDH (NSTAT)
 2202      C
 2203      C              *SET EL(10,11,12) = 0.0*
 2204           EL(10) = 0.0
 2205           EL(11) = 0.0
 2206           EL(12) = 0.0
 2207           GO TO 230
 2208      C
 2209      C
 2210      C            ***UPPER COVER DESIGN--M/SPAR-PLATES OR HC/PNL***
 2211      C             **FACT = 1 FOR PLATES**
 2212      C             **FACT = 2 FOR HC/PNL**
 2213       1300 FACT = 1.0
 2214           IF (SKCODE.EQ.2) FACT=2.
 2215      C
 2216      C            ***FOR COVERS--SAVE FCRC FOR COMPRESSION RIMAX) LESS THAN
 2217      C              *     1 IF NOT STABILITY CRITICAL***
 2218           FCR(1,NSTAT) = 0.0
 2219           RMAX = 0.0
 2220           DO 139 LCASE=1,ILCASE
 2221           I = 1
 2222       131 CALL CKSTABIR,B,EL(1),EL(2),EL(3),STRESS(1,NSTAT,LCASE),STRESS(3,N
 2223          ISTAT,LCASE),FACT,FCRC,FCRS,LCASE,TCPNLU)
 2224           IF (1.0 - R) 132,133,133
 2225       132 I = 2
 2226           EL(2) = EL(2) + 1.0
 2227           EL(3) = BN(1,2)
 2228           GO TO 131
 2229      C
 2230      C             **NO SAVE ON TENSION**
 2231       133 IF (STRESS(1,NSTAT,LCASE)) 139,139,134
 2232       134 IF (2 - I) 135,135,136
 2233       135 FCR(1,NSTAT) = FCRC
 2234           FCR(2,NSTAT) = FCRS
 2235           CRLC(3,NSTAT) = LCASE + 20
 2236           GO TO 139
 2237      C
 2238       136 IF (RMAX - 2) 138,137,139
 2239       137 IF (FCR(1,NSTAT) - FCRC) 138,139,139
 2240       138 RMAX = R
 2241           FCR(1,NSTAT) = FCRC
 2242           FCR(2,NSTAT) = FCRS
 2243           CRLC(3,NSTAT) = LCASE
 2244       139 CONTINUE
 2245      C
 2246      C
 2247      C            ***LOWER COVER DESIGN***
 2248      C             **FACT = 1 FOR PLATES**
 2249      C             **FACT = 2 FOR HC/PNL**
 2250      C
 2251       140 FCR(2,NSTAT) = 0.0
 2252           RMAX = 0.0
 2253           DO 149 LCASE=1,ILCASE
 2254           I = 1
 2255       141 CALL CKSTABIR,B,EL(4),EL(5),EL(6),STRESS(2,NSTAT,LCASE),STRESS(3,N
 2256          ISTAT,LCASE),FACT,FCRC,FCRS,LCASE,TCPNLL)
 2257           IF (1.0 - R) 142,143,143
 2258       142 EL(5) = EL(5) + 1.0
 2259           EL(6) = BN(4,5)
 2260           GO TO 141
 2261      C
 2262      C             **NO SAVE ON TENSION LOADS**
 2263      C              *NO STABILITY LOAD ID FOR TENSION COVER*
 2264       143 IF (STRESS(2,NSTAT,LCASE)) 148,148,144
 2265       144 IF (2 - I) 145,145,146
 2266       145 FCR(3,NSTAT) = FCRC
 2267           FCR(4,NSTAT) = FCRS
 2268           GO TO 148
 2269      C
 2270       146 IF (RMAX - R) 148,147,148
 2271       147 IF (FCR(3,NSTAT) - FCRC) 148,148,148
```

CARD NO **** CONTENTS ****

```
  148  RMAX = R
       FCR(3,NSTAT) = FCRC
       FCR(4,NSTAT) = FCRS
  149  CONTINUE
C
C
C           ***SPAR DESIGN FOR H/SPAR AND FDH CONST ***
C           ***SETUP T(U,L) AND E(U,L) FOR CRUSHING LOAD CALC***
  230  DO 2300 I=1,2
       N = I*3 - 2
       THICK(I) = ENP(9)*D(2)*(EL(N) + D(2)*EL(N+1) + EL(N+2))
 2300 CONTINUE
C
C
       SPCRUH(NSTAT) = 0 0
C
  240  DO 244 LCASE=1,ILCASE
       P(LCASE) = 0.0
       DO 242 I=1,2
       IF (STRESS(I,NSTAT,LCASE)) 242,242,2400
 2400 N = I*3 - 2
       E11(I) = (END(I,LCASE)*EL(N) + D(2)*EL(N+1)*END(4,LCASE) + END(2,L
      LCASE)*EL(N+2))*ENP(9)/THICK(I)*D(2)
       PP = STRESS(I,NSTAT,LCASE)**2*B/(THICK(I)*E11(I)*HS)*D(2)
       IF (P(LCASE) - PP) 241,242,242
  241  P(LCASE) = PP
  242  CONTINUE
C
       IF (SPCRUH(NSTAT) - P(LCASE)) 243,244,244
  243  SPCRUH(NSTAT) = P(LCASE)
       CRLC(7,NSTAT) = LCASE
       PM = P(LCASE)/ENX(1,LCASE)
  244  CONTINUE
C
C            **MIN NO OF L PLIES = 1**
       EL(7) = INT(PM + C3)
       IF (EL(7) - D(1)) 245,246,246
  245  EL(7) = D(1)
  246  EL(10) = EL(7)
       EL(13) = EL(7)
       EL(8)=XN(7,8)
       EL(12)=XN(10,11)
       EL(15)=XN(13,14)
C
C           ***FRONT SPAR DESIGN***
C             *CORRUGATION OR HC/PNL*
       FACT = 1.21
       IF (SFCODE.EQ.2)  FACT=2.5
C
C           ***SETUP ALLOWABLE STABILITY LOADS AT CRITICAL P/A COND***
  610  LCASE = CRLC(4,NSTAT)
       CALL CKSTAB (R,HF,EL(7),EL(8),EL(9),P(LCASE),STRESS(4,NSTAT,LCASE)
      1,FACT,FCRC,FCRS,LCASE,TCPNLF)
       FCR(5,NSTAT)=FCRC
       FCR(6,NSTAT)=FCRS
C
C            **CHECK ALL L.    OR STABILITY**
       DO 615 LCASE=1,ILCASE
       I = 1
  611  CALL CKSTAB (R,HF,EL(7),EL(8),EL(9),P(LCASE),STRESS(4,NSTAT,LCASE)
      1,FACT,FCRC,FCRS,LCASE,TCPNLF)
       IF (1.0 - R) 612,613,613
  612  I = 2
       EL(8) = EL(8) + 1.0
       EL(9) = XN(7,8)
       GO TO 611
C
  613  IF (2 - I) 614,614,615
  614  FCR(5,NSTAT)=FCRC
       FCR(6,NSTAT)=FCRS
       CRLC(4,NSTAT)=20+LCASE
```

```
CARD NO  ****                          CONTENTS                          ****
 2343      615 CONTINUE
 2344      C
 2345      C
 2346      C            ***INTERM SPAR WEB DESIGN***
 2347      C             **CHECK FOR FULL DEPTH HONEYCOMB DESIGN-SECTION-2**
 2348       620 FACT = 2.5
 2349           IF (SPCODE - 2) 6200,6201,630
 2350       6200 FACT = 1.21
 2351      C
 2352      C            ***SETUP ALLOWABLE STABILITY LOADS AT CRITICAL P/A CORD***
 2353       6201 LCASE = CRLC(5,NSTAT)
 2354           CALL CKSTAB (R,NS,EL(10),EL(11),EL(12),PILCASE),STRESS(5,NSTAT,LCA
 2355          1SE),FACT,FCRC,FCRS,LCASE,TCP1&.1)
 2356           FCR(7,NSTAT)=FCRC
 2357      C
 2358           FCR(8,NSTAT)=FCRS
 2359      C             **CHECK ALL LOADS FOR STABILITY**
 2360           DO 625 LCASE=1,ILCASE
 2361           I = 1
 2362       621 CALL CKSTAB (R,NS,EL(10),EL(11),EL(12),PILCASE),STRESS(5,NSTAT,LCA
 2363          1SE),FACT,FCRC,FCRS,LCASE,TCP1&.1)
 2364           IF (1.0 - R) 622,623,623
 2365       622 I = 2
 2366           EL(11) = EL(11) + 1.0
 2367           EL(12) = XN(10,11)
 2368           GO TO 621
 2369      C
 2370       623 IF (2 - I) 624,624,625
 2371       624 FCR(7,NSTAT)=FCRC
 2372           FCR(8,NSTAT)=FCRS
 2373           CRLC(5,NSTAT) = 20 + LCASE
 2374       625 CONTINUE
 2375      C
 2376      C
 2377      C            ***REAR SPAR DESIGN***
 2378      C              *CORRUGATION OR HC/PIL*
 2379       630 FACT = 1.21
 2380           IF (SRCODE.EQ.2)  FACT=2.5
 2381      C
 2382      C            ***SETUP ALLOWABLE STABILITY LOADS AT CRITICAL P/A CORD***
 2383           LCASE = CRLC(6,NSTAT)
 2384           CALL CKSTAB (R,NR,EL(13),EL(14),EL(15),PILCASE),STRESS(6,NSTAT,LCA
 2385          1SE),FACT,FCRC,FCRS,LCASE,TCP1&R)
 2386           FCR(9,NSTAT)=FCRC
 2387           FCR(10,NSTAT)=FCRS
 2388      C
 2389      C             **CHECK ALL LOADS FOR STABILITY**
 2390           DO 635 LCASE=1,ILCASE
 2391           I = 1
 2392       631 CALL CKSTAB (R,NR,EL(13),EL(14),EL(15),PILCASE),STRESS(6,NSTAT,LCA
 2393          1SE),FACT,FCRC,FCRS,LCASE,TCP1&R)
 2394           IF (1.0 - R) 632,633,633
 2395       632 I = 2
 2396           EL(14) = EL(14) + 1.0
 2397           EL(15) = XN(13,14)
 2398           GO TO 631
 2399      C
 2400       633 IF (2 - I) 634,634,635
 2401       634 FCR(9,NSTAT)=FCRC
 2402           FCR(10,NSTAT)=FCRS
 2403           CRLC(6,NSTAT)=20+LCASE
 2404       635 CONTINUE
 2405      C
 2406      C
 2407      C            ***SAVE UPPER/LOWER COVER M-PLIES FOR NEXT STATION***
 2408           SLUMIN = EL(2)
 2409           SLLMIN = EL(5)
 2410           SKLUO(NSTAT) = EL(2)
 2411           SKLLO(NSTAT) = EL(5)
 2412      C
 2413      C
```

```
CARD NO  ****                                CONTENTS                                ****
2414        C            ***CALC WT/IN AND WT/FT***
2415         690  CALL WEIGHT (WEIGH(NSTAT),NSTAT)
2416              IF (I - ISEC) 691,692,692
2417         691  WEIGP(NSTAT) = (WEIGH(NSTAT+1) + WEIGH(NSTAT))*(YST(NSTAT+1) - YST
2418             1(NSTAT))/2.0
2419              ELW(I) = ELW(I) + WEIGP(NSTAT)
2420        C
2421        C            ***SAVE PLY DATA***
2422         692  DO 693 I=1,15
2423              IEL(I,NSTAT)=EL(I)
2424         693  CONTINUE
2425        C
2426        C           ***LOOP FOR NEXT STATION***
2427            35 CONTINUE
2428        C
2429        C            ***PRINT WEIGHT SUMMARY DATA ON APRTID(12) = 1***
2430         6990 IF (APRTID(12)) 6999,6999,6991
2431         6991 WRITE (6,17)ELW(I)
2432         17   FORMAT (15H1  CALC WEIGHT=F10.4)
2433              WRITE (6,18)(WEIGP(I),I=1,10),(WEIGH(I),I=1,11),(SPB(I),I=1,11),(S
2434             1PN(I),I=1,11)
2435         18   FORMAT (10H0   WPNL= 10F9.3,/10H0  WT/IN= 11F9.3,/10H0      B= 11
2436             19.3,/10H0    NDS= 11F9.3)
2437        C
2438        C
2439        C            ***TEST ID---0=NO TEST***
2440         6999 IF (FLAG) 700,800,700
2441        C
2442        C             **TEST NB FOR LOOP 1 OR 2.  0=LOOP 1**
2443         700  IF (NB) 701,701,750
2444         701  IF (ELW(2)) 710,710,702
2445        C
2446        C              *TEST WT(I) WITH WT(I-1)*
2447         702  IF (ELW(I) - ELW(2)) 710,703,703
2448        C
2449        C             **CALC INTERM PT.  USE DELTA B2 OR DELTA NDS2**
2450        C              *SET NB TO 1 AND MOVE (I-1) DATA TO (I-2),
2451        C              *     (I) DATA TO (I-1)*
2452         703  NB = 1
2453              DO 704 I=1,11
2454              SPB(I+22) = SPB(I+11)
2455              SPN(I+22) = SPN(I+11)
2456              SPB(I+11) = SPB(I)
2457              SPN(I+11) = SPN(I)
2458              SKLUO(I+22) = SKLUO(I+11)
2459              SKLLO(I+22) = SKLLO(I+11)
2460              SKLUO(I+11) = SKLUO(I)
2461              SKLLO(I+11) = SKLLO(I)
2462         704  CONTINUE
2463              ELW(3) = ELW(2)
2464              ELW(2) = ELW(1)
2465        C
2466        C            ***TYPE = SPAR ID--- 1=CONST NDS, 2=CONST B SEARCH***
2467              IF (ITYPE - 2) 707,705,705
2468        C
2469        C              *CONST B*
2470         705  DO 706 I=1,11
2471              SPB(I) = SPB(I) - ACDLB2
2472              SPN(I) = WT(1,I)/SPB(I) + 1.0
2473         706  CONTINUE
2474              GO TO 3
2475        C
2476        C              *CONST NDS*
2477         707  DO 708 I=1,11
2478              SPN(I) = SPN(I) + ACDLN2
2479              SPB(I) = WT(1,I)/(SPN(I) - 1.0)
2480         708  CONTINUE
2481              GO TO 3
2482        C
2483        C            ***PT(I) = FIRST POINT OR WT(I) LESS THAN WT(I-1)***
2484         710  IF (ITYPE - 2) 720,711,711
```

CARD NO **** CONTENTS ****

```
      C
      C
      C             **CONST B SEARCH---TEST IF PT(I) IS AT BMAX**
  711 IF (B - BSMAX) 712,800,800
  712 ELW(2) = ELW(1)
      DO 713 I=1,11
      SPB(I+11) = SPB(I)
      SPN(I+11) = SPN(I)
      SKLUO(I+11) = SKLUO(I)
      SKLLO(I+11) = SKLLO(I)
  713 CONTINUE
      C
      IF (B - BSMAX + ACDLB2) 714,717,820
      C
      C              *TEST B(I) + DELTA B1 WITH BMAX*
      C              *IF LESS THAN BMIN, USE THIS POINT*
  714 IF (B - BSMAX + ACDLB1) 715,715,717
  715 B = B + ACDLB1
      DO 716 I=1,11
      SPB(I) = B
      SPN(I) = W(1,I)/SPB(I) + 1.0
  716 CONTINUE
      GO TO 3
      C
      C              *B(I+1)=B+DELTA B2.  SET NB=1, WT(3)=1*WT(2)*
  717 NB = 1
      ELW(3) = 2.0*ELW(2)
      B = B - ACDLB1 + ACDLB2
      IF (BSMAX - B) 800,715,715
      C
      C            ***CONST NOS SEARCH---TEST IF PT(I) IS AT NOSMAX***
      C            ***CONST NOS SEARCH---TEST IF PT(I) IS AT NOSMIN***
  720 IF (NSPMIN - NSPAR + 2.0) 721,800,800
  721 ELW(2) = ELW(1)
      DO 722 I=1,11
      SPB(I+11) = SPB(I)
      SPN(I+11) = SPN(I)
      SKLUO(I+11) = SKLUO(I)
      SKLLO(I+11) = SKLLO(I)
  722 CONTINUE
      C
      NSPAR = NSPAR - ACDLN1
      IF (NSPMIN - NSPAR + 2.0) 723,723,725
  723 DO 724 I=1,11
      SPN(I) = NSPAR
      SPB(I) = W(1,I)/(NSPAR - 1.0)
  724 CONTINUE
      GO TO 3
      C
      C             **NEXT PT = PT(I) - DELTA NOS(2)**
      C             **NEXT PT = PT(I) + DELTA NOS(2)**
      C              *SET NB =1, WT(3)=2*WT(2)**
  725 NB = 1
      ELW(3) = 2.0*ELW(2)
      NSPAR = NSPAR + ACDLN1 - ACDLN2
      IF (NSPMIN - NSPAR + 2.0) 723,723,800
      C
      C
      C           ***LOOP 2---TEST FOR MIN PT FROM W(I), W(I-1), W(I-2)***
      C              *LOOP FOR FINAL PASS IF MIN IS W(I-1) OR W(I-2)*
      C              *SET FLAG TO 0*
      C              *FOR EQUAL WTS$ USE PT WITH LARGER B*
  750 FLAG = 0.0
      IF (ELW(3) - ELW(2)) 751,754,754
  751 IF (ELW(3) - ELW(1)) 752,800,800
      C
      C             **USE PT(3).  SET B,NOS(I) = B,NOS(I-2)**
  752 DO 753 I=1,11
      SPB(I) = SPB(I+22)
      SPN(I) = SPN(I+22)
      SKLUO(I) = SKLUO(I+22)
```

CARD NO **** CONTENTS ****

```
      SKLLO(I) = SKLLO(I+22)
  753 CONTINUE
      GO TO 3
C
C            **PT(I) AND PT(I-1)**
  754 IF (ELW(2) - ELW(1)) 755,800,800
  755 DO 756 I=1,11
      SPB(I) = SPB(I+11)
      SPN(I) = SPN(I+11)
      SKLUO(I) = SKLUO(I+11)
      SKLLO(I) = SKLLO(I+11)
  756 CONTINUE
      GO TO 3
C
C
C           ***CALC STIFFNESS DATA***
C            *CALL SUBR ASTIFF*
  800 CALL ASTIFF
C
C
  999 RETURN
      END
C*************************************************************************
C
C       *****SUBROUTINE ACWFDH*****
C  ***FULL-DEPTH HC SECTION OPTIMIZATION - ADV. COMP. ANALYSIS***
C
C*************************************************************************
C
      SUBROUTINE ACWFDH (N)
C
C          ****SUBR FOR SIZING OF FULL DEPTH HONEYCOMB TORQUE-BOX****
C            **CHECK SECTION COVER AND CORE REQMTS FOR CORE STABILITY*
C              *     WRINKLING AND CRUSHING*
C
C           ***SIZEINDS TO BE BASED ON STATUS OF SIZING ID--ACFDHC***
C            **ACFDHC = D(43)**
C              * 1. OPTIMUM SKIN/CORE COMBINATION--ID=0
C              * 2. CONSTANT CORE/VARIABLE SKIN--ID=1
C              * 3. CONSTANT SKIN/VARIABLE CORE DENSITY--ID=2
C
C
      COMMON T(2060),D(2060),CD(2000),ND(100),TW(900),CT(2048)
C
C
       DIMENSION ENP(9),ENH(6),ENC(3),
      1EL(15),END(5,20),
      2STRESS(6,11,20),CRLC(7,11),SPCRUH(11),P(20),
      3FCR(10,11),W(2,11),
      4CNT(91),TFCOV(2),
      5SPB(33),SPN(33),
      8TF(40)
C
       EQUIVALENCE (ENP(1),D(1155)),(ENH(1),D(1186)),(ENC(1),CT(2043)),
      1(EL(1),T(1300)),(END(1,1),TW(60)),(STRESS(1,1,1),CT(1)),
      2(CRLC(1,1),T(980)),(SPCRUH(1),T(1632)),(P(1),T(1896)),
      3(FCR(1,1),T(1100)),(CNT(1),T(1154)),(C3,CNT(3)),(C8,CNT(23)),
      4(W(1,1),CT(1981)),
      5(SPB(1),T(1232)),(SPN(1),T(1265)),
      8(ACFDHC,D(43)),(ILCASE,ND(4))
C
       EQUIVALENCE (TF(1),T(702)),
      1(CAX,TF(7)),(CRHO,TF(9)),(HPL,TF(8)),(TFCOV(1),TF(10)),
      2(CRMAX,TF(18)),(PCRUSH,TF(19)),(PCRUA,TF(20)),
      3(RCH,TF(21)),(RCC,TF(22)),
      4(RHOCH,TF(23)),(RHOCC,TF(24)),(HC,TF(25)),
      5(CRHOCP,TF(28)),(CRPCCP,TF(29)),
      8(NMAX,ND(3)),
      9(RHOMAX,TF(30))
C
C
```

CARD NO **** CONTENTS ****

```
      C
      C          **** NOTE   TF(3),... MUST NOT BE USED   USED BY ACHEDH****
      C           *** N = STAT***
      C
      C
      C           ***SIZE UPPER AND LOWER COVER IN TWO PASSES***
      C            **SAVE FCRC FOR COMPRESSION FMAX LESS THAN U
      C            **SAVE FCRC FOR COMPRESSION FMAX LESS THAN 1 IF NOT
      C            **      CRITICAL FOR WRINKLING OR CRUSHING**
      C             *IS = STABILITY ID AT LOAD FOR SKINS. 1=NO, 2=YES*
      C             *IC = STABILITY ID AT LOAD FOR CORE, 1=NO, 2=YES*
      C
      C            **SETUP DATA FOR LOAD LOOP AND CKSFDH SUBR**
      C
      C
            DO 201 I=1,40
            TF(I) = 0.0
  201       CONTINUE
            NS  = N(2,N)
            C(N) = SECT(N+1)
            FCR(1,N)  = 0.0
            FCR(3,N) = 0.0
            FCR(7,N) = 0.0
            CRLC(3,N) = CRLC(1,N)
      C
      C           ***UPR/LWR COVER LOOP***
      C            **NS = SKIN ID--DO UPR FIRST***
            NS = 1
            NS2 = 1
            DO 202 I=1,6
            TF(I) = EL(I)
  202       CONTINUE
      C
      C           **LOAD CHECK LOOP***
  210       DO 209 L=1,ILCASE
            IS = 1
            IC = 1
            IF (STRESS(NS,N,L)) 209,209,211
  211       CNX = STRESS(NS,N,L)
      C
            CALL CKSFDH(L)
      C****CCCC
      C
      C           ***TEMP MAX POINT TEST***
            IF (NMAX - 1000) 933,933,299
  933       CONTINUE
      C
      C****CCCC
            P(L) = PCRUSH
      C            **CHECK INITIAL MARGINS*
            IF (RCW - 1.0) 212,212,230
  212       IF (IS - 1) 213,213,215
      C
      C           **CHECK FOR MAX ALLOABLE LOAD FOR COVERS**
  213       IF (FCR(NS2,N) - CRWX) 214,215,215
  214       FCR(NS2,N) = CRWX
            FCR(NS2+1,N) = CFWX
            IF (NS - 1) 2140,2140,215
 2140       CRLC(3,N) = L
      C
      C           **COVER OK FOR WRINKLING.  CHECK CRUSHING**
  215       IF (RCC - 1.0) 216,216,220
  216       IF (IC - 1) 217,217,209
  217       IF (FCR(7,N) - PCRUA) 218,209,209
  218       FCR(7,N) = PCRUA
            FCR(8,N) = PCRUA
            SPCRUH(N) = PCRUSH
            CRLC(5,N) = L
            GO TO 209
      C
      C          ***CORE CRITICAL FOR CRUSHING, OK FOR WRINKLING**
```

```
CARD NO  ****                          CONTENTS                          ****
 2698      C              *CHECK TYPE OF DESIGN *
 2699       220  IC = 2
 2700            FCR(7,N) = CRPCCP
 2701            CRLC(5,N) = L + 20
 2702            IF (1 - ACFDHC) 221,260,270
 2703      C
 2704      C             ***CONSTANT SKIN, VARY CORE DENSITY- USE CALC RHO CORE***
 2705       221  CRHO = RHOCC
 2706            GO TO 289
 2707      C
 2708      C             ***WRINKLING CRITICAL--CHECK CRUSHING**
 2709       230  IS = 2
 2710            IF (RCC - 1.0) 231,231,250
 2711       231  IF (IC - 1) 232,232,240
 2712       232  IF (FCR(7,N) - PCRUA) 233,240,240
 2713       233  FCR(7,N) = PCRUA
 2714            FCR(8,N) = PCRUA
 2715            SPCRUH(N) = PCRUSH
 2716            CRLC(5,N) = L
 2717      C
 2718      C             ***CORE WRINKLING CRITICAL, OK FOR CRUSHING--CHECK TYPE***
 2719       240  FCRINS,N) = CRHXCP
 2720            IF (NS - 1) 241,241,242
 2721       241  CRLC(3,N) = L + 20
 2722       242  IF (1.0 - ACFDHC) 243,260,270
 2723      C
 2724      C              **CONSTANT SKIN DESIGN--USE CALC CORE**
 2725       243  CRHO = RHOCH
 2726            GO TO 289
 2727      C
 2728      C             ***CORE CRITICAL IN WRINKLING AND CRUSHING--CHECK FOR
 2729      C               *CRITICAL DESIGN CRITERIA***
 2730       250  IC = 2
 2731            FCRINS2,N) = CRHXCP
 2732            IF (NS - 1) 251,251,252
 2733       251  CRLC(3,N) = L + 20
 2734       252  FCR(7,N) = CRPCCP
 2735            CRLC(5,N) = L+20
 2736            IF (1.0 - ACFDHC) 253,260,270
 2737       253  CRHO = RHOMAX
 2738            GO TO 289
 2739      C
 2740      C             ***VARY SKIN ONLY--ADD ONE L-PLY IN STEPS***
 2741       260  TF(1) = TF(1) + 1.0
 2742            TF(3) = INT((TF(1) + 2.0*T).../1)*C8 + C3)
 2743      C
 2744      C
 2745            CALL CKSFDH(L)
 2746      C****CCCC
 2747      C
 2748      C             ***TEMP MAX POINT TEST***
 2749            IF (NMAX - 1000) 890,890,299
 2750       890  CONTINUE
 2751      C
 2752      C****CCCC
 2753            IF (IS - 2) 261,261,263
 2754       261  FCRINS2,N) = CRHXX
 2755            IF (NS - 1) 262,262,263
 2756       262  CRLC(3,N) = L + 20
 2757       263  IF (IC - 2) 264,264,265
 2758       264  FCR(7,N) = PCRUA
 2759            SPCRUH(N) = PCRUSH
 2760            CRLC(5,N) = L + 20
 2761      C
 2762      C             **CHECK MARGINS**
 2763       265  IF (RCH - 1.0) 266,268,268
 2764       266  IF (1.0 - RCC) 268,289,289
 2765      C
 2766      C
 2767      C             ***VARY SKIN AND CORE--ADD ONE L-PLY IN STEPS***
 2768       270  TF(32) = EXP(B1*TFCOV(1) + RHOMAX*HC
```

```
CARD NO  ****                          CONTENTS                          ****
 2769      271  TF(31) = TF(32)
 2770           TF(1) = TF(1) + 1.0
 2771           TF(3) = INT((TF(1) + 2.0*TF(2))*C8 + C3)
 2772      C
 2773      C
 2774           CALL CKSFDH(L)
 2775      C****CCCC
 2776      C
 2777      C            ***TEMP MAX POINT TEST***
 2778           IF (NMAX - 10001 991,991,299
 2779       991 CONTINUE
 2780      C
 2781      C****CCCC
 2782           TF(32) = EXP(B)*TFCOV(1) + RHOMAX*HC
 2783      C
 2784      C             **TEST WT(1) WITH WT(I-1)**
 2785           IF (TF(31) - TF(32)) 272,273,271
 2786      C
 2787      C             **RESIZE TO L-PLY(I-1) SET**
 2788       272 TF(1) = TF(1) - 1.0
 2789           TF(3) = INT((TF(1) + 2.0*TF(2))*C8 + C3)
 2790      C
 2791      C
 2792           CALL CKSFDH(L)
 2793      C****CCCC
 2794      C
 2795      C            ***TEMP MAX POINT TEST***
 2796           IF (NMAX - 10001 992,992,299
 2797       992 CONTINUE
 2798      C
 2799      C****CCCC
 2800      C
 2801      C             **CRITICAL LOADS TESTS**
 2802       273 IF (IS - 2) 274,274,276
 2803       274 FCR(NS2,N) = CRHOCP
 2804           IF (NS - 1) 275,275,276
 2805       275 CRLC(3,N) = L + 20
 2806       276 IF (IC - 2) 277,277,278
 2807       277 FCR(7,N) = CRPCCP
 2808           SPCRUH(N) = CRPCCP
 2809           CRLC(5,N) = L + 20
 2810       278 P(N) = PCRUSH
 2811      C
 2812      C            ***LOOP FOR NEXT LOAD CONDITION***
 2813       289 CONTINUE
 2814      C
 2815      C            * *CHECK SKIN STATUS***
 2816       290 IF (NS - 1) 291,291,295
 2817      C
 2818      C             **UPPER COVER.  SAVE DATA AND SETUP FOR LOWER**
 2819       291 DO 292 I=1,3
 2820           EL(I) = TF(I)
 2821           TF(I+3) = TF(I)
 2822           TF(I) = EL(I+3)
 2823       292 CONTINUE
 2824           IF (ACFDHC) 294,293,294
 2825       293 CRHO = RHOMAX
 2826       294 NS = 2
 2827           NS2 = 3
 2828           GO TO 210
 2829      C
 2830      C             **LOWER COVER**
 2831       295 IF (ACFDHC) 297,296,297
 2832       296 CRHO = RHOMAX
 2833       297 EL(4) = TF(1)
 2834           EL(5) = TF(2)
 2835           EL(6) = TF(3)
 2836      C
 2837      C            ***SETUP FINAL CORE DATA***
 2838       298 SPN(N+22) = CRHO
 2839           SPN(N) = CRHO*1728.0
```

CARD NO **** CONTENTS ****

```
      SPB(N+22) = CRHO/SFD(N+1)/ENH(6)
C
C
C
C
C           ***EXIT***
  299 RETURN
      END
C*************************************************************************
C
C       *****SUBROUTINE CKSFDH*****
C   ***STABILITY EVAL FOR FULL DEPTH HC CORE/SKIN - ADV. COMP. ANALYSIS***
C
C*************************************************************************
C
      SUBROUTINE CKSFDH(LCASE)
C
C              ****SUBR FOR FULL DEPTH HONEYCOMB DESIGN****
C               ***CALC SKIN AND CORE STABILITY ALLOWABLES AND REQMTS***
C                **GIVEN COMPRESSION SKIN L,M,N PLIES, NX, CORE DENSITY**
C                 *CALC ALLOWABLE WRINKLING AND CRUSHING LOADS FOR
C                 *     SPECIFIED SKIN AND CORE DENSITY*
C                 *CALC REQUIRED CORE DENSITIES FOR WRINKLING AND CRUSHING
C                 *     FOR GIVEN SKIN LOADS AND STIFFNESSES*
C
C
      COMMON T(2060),D(2060),CD(2000),ND(100),TH(900),CT(2048)
C
      DIMENSION ENP(9),ENH(6),ENQ(5,20),
     1FDHCY(20),FDHFE(20),FDHFG(20),
     2APRTID(12),
     9TF(40),TFCOV(2)
C
      EQUIVALENCE (ENP(1),D(1155)),(ENH(1),D(1164)),(ENQ(1,1),TH(601)),
     1(FDHCY(1),TH(841)),(FDHFE(1),TH(851)),(FDHFG(1),TH(881)),
     3(TF(1),T(2021)),(CNX,TF(7)),(CRHO,TF(8)),(HML,TF(9)),
     4(TFCOV(1),TF(10)),(E11,TF(12)),(E22,TF(13)),(EB,TF(14)),
     5(CEP,TF(15)),(CGP,TF(16)),(FCH,TF(17)),(CRWNX,TF(18)),
     6(PCRUSH,TF(19)),(PCRUA,TF(20)),(RCH,TF(21)),(RCC,TF(22)),
     7(CRNXCP,TF(28)),(CRPCCP,TF(29)),(RHOMAX,TF(30)),
     8(APRTID(1),T(1070)),(NMAX,ND(31)),(NSTAT,ND(55)),
     9(RHOCH,TF(23)),(RHOCC,TF(24)),(HC,TF(25))
C
C
C
C            ***L = LOAD CASE INDEX****
C
C              ***CALC SKIN THICKNESSES AND STIFFNESSES***
      L = LCASE
      NMAX = NMAX + 1
C
  200 DO 201 I=1,2
      N = I*3 - 2
      TFCOV(I) = 2.0*ENP(9)*(TF(N) + 2.0*TF(N+1) + TF(N+2))
  201 CONTINUE
      HC = HML - TFCOV(1) - TFCOV(2)
C
      E11 = (TF(1)*ENQ(1,L) + 2.0*TF(2)*ENQ(4,L) + TF(3)*ENQ(2,L))*D(2)*
     1ENP(9)/TFCOV(1)
      E22 = (TF(1)*ENQ(2,L) + 2.0*TF(2)*ENQ(4,L) + TF(3)*ENQ(1,L))*D(2)*
     1ENP(9)/TFCOV(1)
      EB = SQRT(E11*E22)
C
C              ***CORE PROPERTIES***
      TF(26) = CRHO/ENH(1)
      IF (TF(26) - 0.0330) 202,203,203
  202 CGP = 2.43*TF(26)**1.54*FDHFG(L)
      GO TO 204
  203 CGP = 0.40*TF(26)*FDHFG(L)
  204 CEP = 2.13*TF(26)**1.415*FDHFE(L)
C
```

```
CARD NO  ****                          CONTENTS                          ****
2911        C             ***CALC ALLOWABLES FOR GIVEN CORE DENSITIES***
2912        C              **WRINKLING**
2913              FCH = 0.43*(CEP*COP*EB)**0.3333
2914              CRWNX = TFCOV(I)*FCH
2915              RLW = CNX/CRWNX
2916        C
2917        C              **CRUSHING.  CALC CRUSHING LOAD**
2918              PCRUSH = CNX**2/(TFCOV(I)*HC*E(I))*2.0
2919              PCRUA = TFCOV(I)*2.31*TF(28)**1.464*FDHCY(L)/HC**0.160
2920              RCC = PCRUSH/PCRUA
2921        C
2922        C              **COMPUTE CORE DENSITY REQUIRED FOR GIVEN LOADS AND SKIN
2923        C               *WRINKLING.  TEST DENSITY FOR CORRECT EQUATION*
2924         205  RHOCH = ENH(I)*((CNX/TFCOV(I)/0.43)**3/5.E7/EB/FDHFG(L)/FDHFE(L))*
2925             1*0.3304
2926              TF(27) = RHOCH/ENH(I)
2927        C
2928        C               *CHECK CALC DENSITY*
2929              IF (TF(27) - 0.0338) 206,207,207
2930         206  RHOCH = ENH(I)*((CNX/TFCOV(I)/0.43)**3/0.852/EB/FDHFG(L)/FDHFE(L))
2931             1**0.4141
2932        C
2933        C              **CRUSHING**
2934         207  RHOCC = ENH(I)*(PCRUSH/2.31*HC**0.160/FDHCY(L))**0.6831
2935        C
2936        C             ***SELECT MAX DENSITY FROM CRHO, RHOCH AND RHOCC***
2937        C              **CALC ALLOWABLE WRINKLING AND CRUSHING LOAD AT RHOMAX**
2938         210  CRWNCP = CRWNX
2939              CRPCCP = PCRUA
2940              RHOMAX = CRHO
2941              IF (RHOCH - CRHO) 211,211,213
2942         211  IF (CRHO - RHOCC) 212,290,290
2943         212  RHOMAX = RHOCC
2944              GO TO 215
2945         213  RHOMAX = RHOCH
2946              IF (RHOCH - RHOCC) 214,215,215
2947         214  RHOMAX = RHOCC
2948        C
2949        C              **CALC CORE E AND G**
2950         215  TF(27) = RHOMAX/ENH(I)
2951              IF (TF(27) - 0.0338) 216,217,217
2952         216  TF(34) = 2.43*TF(27)**1.54*FDHFG(L)
2953              GO TO 218
2954         217  TF(34) = 0.40*TF(27)*FDHFG(L)
2955         218  TF(33) = 2.13*TF(27)**1.415*FDHFE(L)
2956        C
2957              CRHOCP = TFCOV(I)*0.43*(TF(33)*TF(34)*EB)**0.3333
2958              CRPCCP = TFCOV(I)*2.31*TF(27)**1.464*FDHCY(L)/HC**0.160
2959        C
2960        C             ***BREAKPOINT PRINT***
2961        C             ***PRINT SECTION DATA ON APRTID(NSTAT) = 1***
2962         290  IF (APRTID(NSTAT)) 299,299,294
2963         294  WRITE (6,295)NSTAT,L,NMAX
2964         295  FORMAT (1H0/,24H0  ***CKSFDH SUBR -- STA,I2,12H  LOAD CASE ,I2,8H
2965             1 PT NO=I4,4H*** ,/8H0  TF )
2966         296  FORMAT (3X,I2,3X,5E10.8)
2967        C
2968              DO 297 K=1,40,5
2969              KK = K + 4
2970              WRITE (6,296)K,(TF(J),J=K,KK,1)
2971         297  CONTINUE
2972        C
2973        C
2974        C
2975        C             ****EXIT****
2976         299  RETURN
2977              END
2978        C*************************************************************************
2979        C
2980        C        *****SUBROUTINE WEIGHT*****
2981        C   ***SECTION WT PER INCH FOR ADV. COMP. H/SPAR/FDH TORQUE-BOX***
```

CARD NO **** CONTENTS ****

```
C
C*****************************************************************************
C
      SUBROUTINE WEIGHT (WEI,NSTAT)                                    WEIG1010
C
C  *   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *
C          FULL DEPTH HONEYCOMB TORQUE-BOX DESIGNS****
C             ***TYPE ID   PLATES--SKCODE=1 AND SPCODE = 1 OR 2*
C               *          HC/PNL--SKCODE=2 AND SPCODE = 1 OR 2*
C               *          FULL DEPTH HC--SKCODE=1 AND SPCODE = 3*
C  *   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *
C
C                                                                      WEIG1020
C                                                                      WEIG1030
      COMMON T(9163)                                                   WEIG1040
C                                                                      WEIG1050
      DIMENSION D(2069),CT(2048),ND(100),                              WEIG1060
     1ENP(9),ENH(6),ENC(3),EL(15),                                     WEIG1061
     2W(30),                                                           WEIG1062
     3SLCFS(5),SHBCP(2),SHKMS(2),SHDCF(2),                             WEIG1063
     4SPB(33),SPN(33),                                                 WEIG1064
     5APRTID(12),                                                      WEIG1065
     9H(12,11),CNT(38)                                                 WEIG1069
C                                                                      WEIG1070
      EQUIVALENCE (D(1),T(2061)),(CT(1),T(7121)),(ND(1),T(6121)),      WEIG1080
     1(ENP(1),D(1155)),(ENH(1),D(1164)),(ENC(1),CT(2043)),             WEIG1081
     2(EL(1),T(1300)),(CNT(1),T(1541)),(PFFSCV,CT(2047)),              WEIG1082
     3(PFFSSP,CT(2048)),(DPRHO,D(464)),(CFRIB,D(400)),(SHDCF(1),D(427)),WEIG1083
     4(TCPNLU,CNT(29)),(TCPNLL,CNT(30)),(TCPNLI,CNT(31)),              WEIG1084
     5(TCPNLF,CNT(32)),(TCPNLR,CNT(33)),(C4,CNT(14)),(NSPAR,CNT(21)),  WEIG1085
     6(HS,CNT(24)),(HF,CNT(25)),(HR,CNT(26)),                          WEIG1086
     7(SFCODE,ND(45)),(SRCODE,ND(46)),                                 WEIG1087
     8(H(1,1),CT(1981)),                                               WEIG1088
     9(SKCODE,ND(42)),(SPCODE,ND(43))                                  WEIG1089
     A,(C9,CNT(34)),(C10,CNT(35)),(C7,CNT(22)),(DKMIR,D(24))           WEIG1090
     B,(SLCFS(1),D(470)),(SHDCP(1),D(423)),(SHKMS(1),D(410))           WEIG1091
     C,(SPB(1),T(1232)),(SPN(1),T(1265))                               WEIG1092
     D,(APRTID(1),T(1070))                                             WEIG1094
C                                                                      WEIG1099
C                                                                      WEIG1090
      INTEGER SPCODE,SKCODE
      INTEGER SFCODE,SRCODE
      REAL NSPAR                                                       WEIG1110
C                                                                      WEIG1120
      DO 300 I=1,30
      W(I) = 0.0
  300 CONTINUE
C
C           ***SETUP CONSTANTS FOR WIDTH AND NO OF SPARS***
C            **SPB(12-22) = CELL SIZE FOR FDH**
C            **SPN(12-22) = CORE DENSITY FOR FDH**
      W(17) = NSPAR - D(2)
      W(18) = W(1,NSTAT) + C4
C
C           ***CALC THICKNESSES***
      DO 301 I=1,5
      IH = I*3 - 2
      W(I) = (EL(IH) + 2.0*EL(IH+1) + EL(IH+2))*ENP(9)*D(2)
  301 CONTINUE
C
C            **FILLER THICKNESS AT SPARS = 2*L-PLY THICKNESS**
C             *FASTENER LENGTH = T(SKIN) + T(FILLER) + T(RIB WEB) +
C             *   TCPNL(U,L) + LEFF(HEAD,GRIP,RETAINERS)=0.625 IN.)*
C             *FILLER = 0.0 FOR FDH AND HC/PNL, ATT = 0.0 FOR FDH*
C             *INITIAL SETUP FOR W/SPAR-PLATES*
      W(15) = C7*W(1)
      W(21) = 4.0*ENP(9)*EL(1)
      W(22) = 4.0*ENP(9)*EL(4)
      W(27) = W(1) + W(21)/2.0 + W(15) + TCPNLU + 0.625
      W(28) = W(2) + W(22)/2.0 + W(15) + TCPNLL + 0.625
C
```

```
CARD NO  ****                          CONTENTS                          ****
3053     C            ***CAPS FOR F/S AND R/S***
3054     C             **FOR HC/PNL, C9 AND C10 ARE INSERT AREAS**
3055     C               *C9 AND C10 = 0.0 FOR PLATES*
3056     C               *C7, C9, C10 = 0.0 FOR FDH*
3057      300  DO 303 I=1,2
3058           W(20) = W(I)*SLCFS(4)
3059           IF (W(20) - SLCFS(3)) 391,392,392
3060      391  W(20) = SLCFS(3)
3061      392  W(I+10) = W(20)*SWDCP(1) + W(3)*SWDCP(3)/D(2)
3062           W(I+12) = W(20)*SWDCP(2) + W(5)*SWDCP(2)/D(2)
3063      303  CONTINUE
3064           W(1) = W(1) + C9
3065           W(2) = W(2) + C10
3066           W(3) = W(3) + C9
3067           W(4) = W(4) + C10
3068     C
3069     C            ***I-SPAR CAPS = F(C7,TSKU,INSERTS AS REQD)***
3070     C              *FOR FDH W(I)=SPAR CAPS) = DOUBLE WEIGHT*
3071     C              *SET TF(FILLER) AND L(ATT) = 0.0*
3072           IF (ND(3) - SPCODE) 3930,3930,3931
3073      3930 W(17) = SPSPINSTAT+11)
3074           W(15) = W(1,NSTAT)*DEPTH*ENP(8)
3075           W(21) = 0.0
3076           W(22) = 0.0
3077           W(27) = 0.0
3078           W(28) = 0.0
3079           GO TO 3939
3080     C
3081      3931 W(15) = W(17)*(D(2)*W(15) + C9 + C10)
3082     C
3083     C            **CONVERT TO WEIGHT**
3084      3939 DO 394 I=1,5
3085           W(I) = W(I)*ENP(8)
3086           W(I+10) = W(I+10)*ENP(8)
3087      394  CONTINUE
3088     C
3089     C
3090     C            ***COVERS***
3091     C              *FOR FDH, SPCODE=3 AND SKCODE=1*
3092           W(1) = W(1)*W(18)
3093           W(2) = W(2)*W(18)
3094           W(6) = PFFSCV*W(18)
3095           W(7) = PFFSCV*W(18)
3096     C
3097     C            **TEST FOR HC/PNL COVERS AND FDH**
3098           IF (ND(3) - SPCODE) 400,400,4000
3099     C
3100     C            **FULL DEPTH HONEYCOMB***
3101     C              *SPAR WT= CORE HEIGHT*
3102     C              *W(17)*CELL SIZE AND INITIAL VALUE OF W(16)=    0.0 *
3103      400  W(4) = W(I,NSTAT)*HS*SPN(INSTAT+22)
3104           W(9) = 0.0
3105           W(16) = 0.0
3106           GO TO 403
3107     C
3108     C            **TEST FOR HC/PNL OR PLATES.  SKCODE=2 FOR HC/PNL**
3109      4000 IF (ND(2) - SKCODE) 4001,4001,401
3110     C
3111     C            **HONEYCOMB PANEL COVERS**
3112     C              *CORRECT L(ATT) TO L(CALC) - TF(FILLER, SET TF(FILLER)=0.0
3113      4001 W(6) = W(18)*(TCPNLU*ENC(1) + DCRHO) + W(6)
3114           W(7) = W(18)*(TCPNLL*ENC(1) + DCRHO) + W(7)
3115           W(27) = W(27) - W(21)
3116           W(28) = W(28) - W(22)
3117           W(21) = 0.0
3118           W(22) = 0.0
3119     C
3120     C            **SPARS--CORRU OR H/PNL**
3121     C              *INTERM. SPARS*
3122      401  W(9) = PFFSSP*HS*CFRIB*W(17)
3123           W(4) = W(4)*HS*CFRIB*W(17)
```

CARD NO **** CONTENTS ****

```
      IF (IND(2) - SPCODE) 4021,402,4020
 402  W(9) = WS*(TCPNLI*ENC(1) + DSPHO) ..7) + W(9)/CFRIB
      W(4) = W(4)/CFRIB
 4020 W(16) = (DWMIR - D(1))*(W(4) + W(5))
C
C             **FILLER AND ATT .TS**
 4021 DO 4022 I=1,2
      W(I+22) = W(I+20)*ENP(0)*W(17)
      W(I+24) = 0.001473*W(17)*W(I+26)
 4022 CONTINUE
C
C
C              *FRONT SPAR*
 403  W(8) = PFFSSP*HF*SWBCF(1)
      W(3) = W(3)*HF*SWBCF(1)
      IF (IND(2) - SFCODE) 404,404,405
 404  W(8) = HF*(TCPNLF*ENC(1) + DBPHO) + W(8)/SWBCF(1)
      W(3) = W(3)/SWBCF(1)
C
C              *REAR SPAR*
 405  W(10) = PFFSSP*HR*SWBCF(2)
      W(5) = W(5)*HR*SWBCF(2)
      IF (IND(2) - SRCODE) 406,405,407
 406  W(10) = HR*(TCPNLR*ENC(1) + DBPHO) + W(10)/SWBCF(2)
      W(5) = W(5)/SWBCF(2)
C
C            ***W(MISC) FOR I-SPAR, F/S AND R/S***
 407  W(16) = W(16) + (SWKMS(1) - D(1))*(W(3) + W(11) + W(12)) + (SWKMS(
     12) - D(1))*(W(5) + W(13) + W(14))
C
C            ***SUM***
C
      WEI = W(16) + W(23) + W(24) + W(25) + W(26)
      DO 408 I=1,15
      WEI = WEI + W(I)
 408  CONTINUE
C
C
C            ***PRINT SECTION DATA ON APRTID(NSTAT) = 1***
 490  IF (APRTID(NSTAT)) 499,493,494
 494  WRITE (6,495)NSTAT,NSPAR,WEI
C
 495  FORMAT (24H0  ***WEIGHT SUBR -- STA,I3,8H  NSPAR=,F7.1,8H  WT/IN=,
     1F8.4,4H*** ,/6H0   W )
 496  FORMAT (3X,I2,2X,5F12.4)
 497  FORMAT (12H0  EL(1-15)=,3F6.1,2X,3F6.1,2X,3F5.1,2X,3F5.1,2X,3F5.1)
C
      DO 498 N=1,30,5
      K = N + 4
      WRITE (6,496)N,(W(I),I=N,K,1)
 498  CONTINUE
      WRITE (6,497)(EL(I),I=1,15)
C
C
 499  RETURN
      END
C*********************************************************************
C
C       *****SUBROUTINE ACH..******
C  ***M/RIB TORQUE-BOX SYNTHESIS - ADV. COMP. ANALYSIS***
C
C*********************************************************************
C
      SUBROUTINE ACHRBS                                                 ACST0010
C
C            ***ADV. COMP. BOX SYNTHESIS--STR/RIB CONST***              ACST0020
C
C            ***COVER CONSTRUCTION ID--XSTRU AND XSTRL***
C             **WORKING ID=SKCODE--1=1, 2=2, 3=T, 4=HAT*
C
C                                                                       ACST0030
```

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CARD NO  ****                          CONTENTS                          ****
 3195          COMMON T(19168)                                          ACST0040
 3196     C                                                             ACST0050
 3197          DIMENSION D(2500),CD(2000),ND(100),TH(900),CT(2040),     ACST0060
 3198         1ENP(5),ENH(6),CNT(9),                                    ACST0061
 3199         2ENO(5,20),ENX(3,20),EL(15),WS(8),EIC(3),ELW(12),XEL(10), ACST0062
 3200         3P(20),WEIGH(11),SPCRUH(11),FCR(10,11),IEL(15,11),        ACST0064
 3201         5DVFS(11),DVPS(11),DVFSRS(11),SLCFS(5),                   ACST0065
 3202         6TBFS(11),TBRS(11),YST(11),                               ACST0066
 3203         7SPB(33),SPN(33),DCBST(11),DCNOS(11),WEIGP(10),           ACST0067
 3204         8THICK(4),SKLUO(33),SKLLO(33),STLUO(33),STLLO(33),        ACST0068
 3205         9N(2,11),VC3,11,20),STRESS(6,11,20),CRLC(7,11),STRING(2,10,11) ACST0069
 3206         A,YBJ(11),YBL(11)                                         ACST0070
 3207         B,DOP2(4),DOP3(4)                                         ACST0071
 3208         C,APRTID(12)                                              ACMS0072
 3209         D,SHDCP(2),DNDU(11),DNDL(11)                              ACST0072
 3210         E,TX(160),TXS(100)                                        ACST0074
 3211     C                                                             ACST0079
 3212          EQUIVALENCE (D(1),T(206)),(CD(1),T(4123)),(ND(1),T(6123)), ACST0080
 3213         1(TH(1),T(622)),(CT(1),T(712)),(THICK(1),T(1916)),        ACST0081
 3214         2(ENP(1),D(1155)),(ENH(1),D(1164)),                       ACST0082
 3215         3(ENO(1,1),TH(601)),(ENX(1,1),TH(701)),(ENC(1),CT(2043)), ACST0083
 3216         4(EL(1),T(1300)),(WS(1),T(1315)),(CNT(1),T(1541)),        ACST0084
 3217         5(STRING(1,1,1),T(1676)),(WEIGH(1),T(1665)),(SPCRUH(1),T(1632)), ACST0085
 3218         6(CRLC(1,1),T(1960)),(P(1),T(1836)),(IEL(1,1),TH(1)),     ACST0086
 3219         7(VC(1,1,1),CT(1321)),(W(1,1),CT(1981)),(STRESS(1,1,1),CT(1)), ACST0087
 3220         8(FCR(1,1),T(1100)),(ELW(1),T(1643)),                     ACST0088
 3221         9(ILCASE,ND(91)),(XEL(1),T(1323)),(WEIGP(1),T(1655))      ACST0089
 3222         A,(SPCODE,ND(93)),(SJCODE,ND(95)),(SRCODE,ND(96)),(SKCODE,ND(92)) ACST0090
 3223         B,(TYPE,ND(94)),(XXCODE,CNT(19)),(XPCODE,CNT(20)),(XFCODE,CNT(27)) ACST0091
 3224         C,(XRCODE,CNT(28)),(NSTR,CNT(21)),(XSTRU,CNT(1)),(XSTRL,CNT(2)) ACST0092
 3225         D,(XTYPE,CNT(10)),(BRMIN,CNT(3))                          ACST0093
 3226         E,(BRMAX,CNT(4)),(BSMIN,CNT(5)),(BSMAX,CNT(6)),(BHMAX,CNT(7)) ACST0094
 3227         F,(C1,CNT(11)),(C2,CNT(12)),(C3,CNT(13)),(C4,CNT(14))     ACST0095
 3228         G,(NSTRMN,CNT(17)),(NSTRMX,CNT(18)),(HS,CNT(24))          ACST0096
 3229         H,(HF,CNT(25)),(HR,CNT(26))                               ACST0097
 3230         I,(TCPNLI,CNT(31)),(TCPNLF,CNT(32)),(TCPNLR,CNT(33))      ACST0098
 3231     C                                                             ACST0099
 3232          EQUIVALENCE (SPB(1),T(1232)),(SPN(1),T(1265)),           ACSR0100
 3233         1(DCBST(1),D(765)),(DCNOS(1),D(776)),                     ACST0101
 3234         2(TBFS(1),T(153)),(TBRS(1),T(165)),(YST(1),T(51)),        ACST0102
 3235         3(DVFS(1),D(842)),(DVRS(1),D(853)),(DVFSRS(1),CD(1924)),  ACST0103
 3236         4(SLCFS(1),D(1470)),(ACSSID,D(1438)),                     ACST0104
 3237         5(YBJ(11),T(679)),(YBL(11),T(690)),                       ACST0105
 3238         7(DOP2(4),D(1367)),(DOP3(4),D(1371)),                     ACST0107
 3239         8(ACDLN1,DOP2(3)),(ACDLN2,DOP2(4)),                       ACST0108
 3240         9(ACDLB1,DOP3(3)),(ACDLB2,DOP3(4))                        ACST0109
 3241         A,(TX(1),CD(1)),(TXS(1),CD(161)),(BS,TX(30)),(WIDE,TX(31)) ACST0110
 3242         B,(SKLUO(1),CD(261)),(SKLLO(1),CD(29)),(STLUO(1),CD(327)) ACST0111
 3243         C,(STLLO(1),CD(360)),(SLUMIN,CNT(8)),(SLLMIN,CNT(         ACST0112
 3244         D,(STUMIN,CNT(15)),(STLMIN,CNT(16)),(B,TX(30))            ACST0113
 3245         E,(SHDCP(1),D(1423)),(DNDU(1),D(1931)),(DNDL(1),D(1942))  ACST0114
 3246         F,(APRTID(1),T(1107)),(NMAX,ND(3)),(NSTAT,ND(55)),(ISE[illegible],ND(62)) ACST0115
 3247     C                                                             ACST0120
 3248     C
 3249     -
 3250          INTEGER     SPCODE,SKCODE,TYPE
 3251          INTEGER SFCODE,SRCODE
 3252          INTEGER FLAG
 3253     C
 3254          REAL NSTR
 3255          REAL NSTRMN,NSTRMX,ILL
 3256     C
 3257          SPCODE = XPCODE
 3258          TYPE = XTYPE
 3259          SFCODE = XFCODE
 3260          SRCODE = XRCODE
 3261     C
 3262     C
 3263     C              ***SETUP SEARCH DATA--TEST ID FOR TYPE OF DESIGN***
 3264     C                *ID=D(1438)=ACSSID.  0=SEARCH, 1=INPUT B, 2=INPUT NOS*
 3265     C                *IF SEARCH, USE TYPE AS CONTROL ID--1=CONST NOS, 2=B
```

CARD NO **** CONTENTS ****

```
C
C
      DO 300 I=1,22
      SPB(I) = 0.0
      SPN(I) = 0.0
  300 CONTINUE
C
C           ***CLEAR TX AND TXS ARRAYS***
      DO 3001 I=1,160
      TX(I) = 0.0
 3001 CONTINUE
      DO 3002 I=1,100
      TXS(I) = 0.0
 3002 CONTINUE
C
C           ***INITIALIZE LISKINS,STR)***
      DO 3003 I=1,11
      SALLO(I) = SLMIN
      SPLLO(I) = SLMIN
      STLLO(I) = STMIN
      STLLO(I) = STLMIN
 3003 CONTINUE
C
      FLAG = 0.0
      IF (ACSSID - D(1)) 305,301,303
C
C             *INPUT B*
  301 DO 302 I=1,11
      SPB(I) = DCBST(I)
      SPN(I) = W(1,I)/SPB(I) - 1.0
  302 CONTINUE
      GO TO 350
C
C              *INPUT NOS*
  303 DO 304 I=1,11
      SPN(I) = DCNOS(I)
      SPB(I) = W(1,I)/(SPN(I) + 1.0)
  304 CONTINUE
      GO TO 350
C
C              *SEARCH--TEST TYPE OF ORIENTATION--CONST B OR NOS*
  305 FLAG = 1
      IF (TYPE - 2) 308,306,306
C
C              *CONST B -- SEARCH BMIN TO BMAX--NO ROUND ON NOS*
  306 DO 307 I=1,11
      SPB(I) = BSMIN
      SPN(I) = W(1,I)/SPB(I) - 1.0
  307 CONTINUE
      GO TO 350
C
C              *CONST NOS---SEARCH FROM NOSMAX TO NOSMIN*
  308 IF (NSTRMN - NSTRMX) 309,309,310
  309 FLAG = 0.0
  310 DO 311 I=1,11
      SPN(I) = NSTRMX
      SPB(I) = W(1,I)/(NSTRMX + 1.0)
  311 CONTINUE
      GO TO 350
C
C
C
C           ***INITIALIZE DATA***
  350 NB = 0.0
      DO 3500 I=1,12
      ELM(I) = 0.0
 3500 CONTINUE
C
C           ***PRINT CONSTANTS ON APRTID(12) = 1***
 3501 IF (APRTID(12)) 3503,3503,3502
 3502 WRITE (6,105)
```

```
CARD NO  ****                          CONTENTS                          ****
 3337          DO 109 K=1,38,5
 3338          J = K + 4
 3339          WRITE (6,1061K,(CNT(KK),KK=K,J,1)
 3340   109  CONTINUE
 3341   C
 3342          WRITE (6,102)(ENP(K),K=1,9)
 3343   C
 3344          WRITE (6,103)
 3345          DO 107 K=1,100,5
 3346          J = K + 4
 3347          WRITE (6,1061K,(THICK*C00),KK=K,J,1)
 3348   107  CONTINUE
 3349   C
 3350          WRITE (6,104)
 3351          DO 108 K=1,60,5
 3352          J = K + 4
 3353          WRITE (6,1061K,(THICK*700),KK=K,J,1)
 3354   108  CONTINUE
 3355   C
 3356    3503 NMAX = 0.0
 3357   C
 3358   C
 3359   C            ***SEARCH LOOP***
 3360      3  ELN(1) = 0.0
 3361   C
 3362   C            ***M/RIB ANALYSIS--TIP TO ROOT***
 3363   CCC
 3364          DO 35 ISEC=1,11
 3365   C
 3366          NSTAT = 12 - ISEC
 3367   C
 3368          DO 4 I=1,6
 3369          CRLC(I,NSTAT) = 0.0
 3370          XEL(I) = 1.0
 3371      4   CONTINUE
 3372          CRLC(7,NSTAT) = 0.0
 3373          MIDL=MI(1,NSTAT)
 3374   C
 3375   C            ***ESTIMATED EFFECTIVE DEPTHS + FEYBAR COVER)***
 3376   C             **WEB DEPTHS ASSUMED TO BE 0-2*(DELTA YBAR)**
 3377   C              *MIN EFF DEPTH = 1.0 IN.*
 3378    351  DELCOV = YBU(INSTAT) + YBL(INSTAT)
 3379          MI = MI2,NSTAT) - DELCOV
 3380          IF (MI - D(1)) 3511,3512,3512
 3381    3511 MI = D(1)
 3382    3512 MS = MI2,NSTAT) - 2.0*DELCOV
 3383          IF (MS - D(1)) 3513,3514,3514
 3384    3513 MS = D(1)
 3385    3514 MF = TBFS(NSTAT) - 2.0*DELCOV
 3386          IF (MF - D(1)) 3515,3516,3516
 3387    3515 MF = D(1)
 3388    3516 MR = TBRS(NSTAT) - 2.0*DELCOV
 3389          IF (MR - D(1)) 3517,3519,3519
 3390    3517 MR = D(1)
 3391   C
 3392   C            ***SETUP CONSTANTS (C1,C2,C4) I-11***
 3393    3519 B = SPB(NSTAT)
 3394          NSTR = SPN(NSTAT)
 3395          C1 = DVFS(NSTAT)*DVFSRS(NSTAT)/D(19)
 3396          C2 = DVRS(NSTAT)*(D(1) - DVFSRS(NSTAT))/D(19)
 3397          C4 = SLCFS(5)*(SLCFS(1) + SLCFS(2) + SWBCP(1) + SWBCP(2)
 3398   C
 3399          DO 15 LCASE=1,ILCASE
 3400          WS(1)=V(2,NSTAT,LCASE)/(MI*(WIDE*C4))*DNXU(NSTAT)
 3401          WS(2)=-WS(1)*DROL(NSTAT)/DNXU(NSTAT)
 3402          WS(3)=V(3,NSTAT,LCASE)/(2.*WIDE*MI)
 3403   C
 3404          WS(0) = V(1,NSTAT,LCASE)/2.0
 3405          WS(4) = ABS(C1*WS(0)/MF + WS(3))
 3406          WS(5) = 0.0
 3407          WS(6) = ABS(C2*WS(0)/MR - WS(3))
```

```
CARD NO  ****                          CONTENTS                          ****
 3408      C
 3409       356  DO 0 I=1,6
 3410            STRESS(I,NSTAT,LCASE)=WS(I)
 3411        0   CONTINUE
 3412      C
 3413            IF (WS(1)) 9,11,10
 3414        9   EL(1) = WS(1)/ENX(2,LCASE) + C3
 3415            GO TO 11
 3416       10   EL(1) = WS(1)/ENX(1,LCASE) + C3
 3417         11 IF (WS(2))12,13,14
 3418       12   EL(2) = WS(2)/ENX(2,LCASE) + C3
 3419            GO TO 13
 3420       14   EL(2) = WS(2)/ENX(1,LCASE) + C3
 3421         13 CONTINUE
 3422      C
 3423            DO 60 I=3,6
 3424            EL(I) = ABS(WS(I)/ENX(3,LCASE)) + C3
 3425        60  CONTINUE
 3426      C
 3427            DO 151 I=1,6
 3428            IF (CRLC(I,NSTAT)) 150,150,151
 3429       150  CRLC(I,NSTAT) = LCASE
 3430       151  IF (EL(I).LE.XEL(I)) GO TO 159
 3431            XEL(I)=EL(I)
 3432            CRLC(I,NSTAT)=LCASE
 3433       159  CONTINUE
 3434      C
 3435         15 CONTINUE
 3436      C
 3437            DO 600 I=1,6
 3438            XEL(I) = INT(XEL(I))
 3439       600  CONTINUE
 3440      C
 3441            EL(1)=XEL(1)
 3442            EL(2)=XEL(3)
 3443            EL(3)=XN(1,2)
 3444            EL(4)=XEL(2)
 3445            EL(5)=EL(2)
 3446            EL(6)=XN(4,5)
 3447            EL(8)=XEL(4)
 3448            EL(10)=XEL(5)
 3449            EL(11)=XEL(6)
 3450      C
 3451      C
 3452      C            ***PRINT SECTION CNSTANTS JN APRTID(12) = 1***
 3453       1000 IF (APRTID(12)) 1009,1009,1001
 3454       1001 WRITE (6,100)(WS(K),K=1,8)
 3455       100  FORMAT (7H0   WS=,4E18.8,/7X,4E18.8)
 3456       101  FORMAT (7H0  XEL=,8E18.8)
 3457       102  FORMAT (7H0  ENP=,5E18.8,/7X,4E18.8)
 3458      C
 3459       103  FORMAT (6H0  END)
 3460       104  FORMAT (6H0  ENX)
 3461       105  FORMAT (6H0  CNT)
 3462      C
 3463       108  FORMAT (1H ,3X,13,5E18.8)
 3464      C
 3465            WRITE (6,101)(XEL(K),K=1,8)
 3466      C
 3467       1009 CONTINUE
 3468      C
 3469      C
 3470      C
 3471      C
 3472      C
 3473      C          ****SYNTHESIZE UPR/LWR STR COVERS AND RIBS****
 3474       500  CALL ACWSTR
 3475      C
 3476      C            ***SAVE SKIN AND STR L-PLY DATA***
 3477            SKUO(NSTAT) = EL(1)
 3478            SKLO(NSTAT) = EL(4)
```

```
CARD NO      ****                          CONTENTS                          ****
  3479            STLUG(NSTAT) = STRNG(1,IC,NSTAT)
  3480            STLLO(NSTAT) = STRNG(6,IC,NSTAT)
  3481      C
  3482      C
  3483      C             ***FRONT SPAR DESIGN***
  3484      C               *CORRUGATION OR HC/PNL*
  3485       601  FACT = 1.21
  3486            IF (SPCODE.EQ.2)  FACT=2.5
  3487      C
  3488      C             ***SETUP ALLOWABLE STABILITY LOADS AT CRITICAL P/A COND***
  3489       610  LCASE = CRLC(4,NSTAT)
  3490            CALL CKSTAB (R,HF,EL(7),EL(8),EL(9),PILCASE),STRESS(4,NSTAT,LCASE)
  3491           1,FACT,FCRC,FCRS,LCASE,TCP(&F)
  3492            FCR(5,NSTAT)=FCRC
  3493            FCR(6,NSTAT)=FCRS
  3494      C
  3495      C             **CHECK ALL LOADS FOR STABILITY**
  3496            DO 615 LCASE=1,TLCASE
  3497            I = 1
  3498       611  CALL CKSTAB (R,HF,EL(7),EL(8),EL(9),PILCASE),STRESS(4,NSTAT,LCASE)
  3499           1,FACT,FCRC,FCRS,LCASE,TCP(&F)
  3500            IF (1.0 - RI 612,613,613
  3501       612  I = 2
  3502            EL(8) = EL(8) + 1.0
  3503            EL(9) = XN(7,8)
  3504            GO TO 611
  3505      C
  3506       613  IF (2 - I) 614,614,615
  3507       614  FCR(5,NSTAT)=FCRC
  3508            FCR(6,NSTAT)=FCRS
  3509            CRLC(4,NSTAT)=20+LCASE
  3510       615  CONTINUE
  3511      C
  3512      C
  3513      C
  3514      C             ***REAR SPAR DESIGN***
  3515      C               *CORRUGATION OR HC/PNL*
  3516       633  FACT = 1.21
  3517            IF (SPCODE.EQ.2)  FACT=2.5
  3518      C
  3519      C             ***SETUP ALLOWABLE STABILITY LOADS AT CRITICAL P/A COND***
  3520            LCASE = CRLC(6,NSTAT)
  3521            CALL CKSTAB (R,HR,EL(13),EL(14),EL(15),PILCASE),STRESS(6,NSTAT,LCA
  3522           1SE),FACT,FCRC,FCRS,LCASE,TCP(&R)
  3523            FCR(9,NSTAT)=FCRC
  3524            FCR(10,NSTAT)=FCRS
  3525      C
  3526      C             **CHECK ALL LOADS FOR STABILITY**
  3527            DO 635 LCASE=1,TLCASE
  3528            I = 1
  3529       631  CALL CKSTAB (R,HR,EL(13),EL(14),EL(15),PILCASE),STRESS(6,NSTAT,LCA
  3530           1SE),FACT,FCRC,FCRS,LCASE,TCP(&R)
  3531            IF (1.0 - RI 632,633,633
  3532       632  I = 2
  3533            EL(14) = EL(14) + 1.0
  3534            EL(15) = XN(13,14)
  3535            GO TO 631
  3536      C
  3537       633  IF (2 - I) 634,634,635
  3538       634  FCR(9,NSTAT)=FCRC
  3539            FCR(10,NSTAT)=FCRS
  3540            CRLC(6,NSTAT)=20+LCASE
  3541       635  CONTINUE
  3542      C
  3543      C
  3544      C             ***CALC WT/IN AND WT/PNL***
  3545       690  CALL WEIGH2 (WEIGH(NSTAT),NSTAT)
  3546            IF (1 - ISEC) 691,692,692
  3547       691  WEIGP(NSTAT) = (WEIGH(NSTAT+1) + WEIGH(NSTAT))*(YST(NSTAT+1) - YST
  3548           1(NSTAT))/2.0
  3549            ELM(1) = ELM(1) + WEIGP(NSTAT)
```

```
CARD NO   ****                    CONTENTS                    ****

      C
      C               ***SAVE PLY DATA***
  692 DO 693 I=1,15
      IEL(I,NSTAT)=EL(I)
  693 CONTINUE
      C
      C              ****LOOP FOR NEXT STATION****
   35 CONTINUE
      C
      C               ***PRINT WEIGHT SUMMARY DATA ON APRTID(12) = 1***
 6990 IF (APRTID(12)) 6999,6999,6991
 6991 WRITE (6,17)ELM(1)
   17 FORMAT (15H  CALC WEIGHT=F10.4)
      WRITE (6,18)(WEIGP(I),I=1,10),(WEIGH(I),I=1,11),(SPB(I),I=1,11),(S
     1PN(I),I=1,11)
   18 FORMAT (1(H0   WPNL= 10F9.3,/10H0  WT/IN= 11F9.3,/10H0      B= 11F
     19.3,/10H0    NOS= 11F9.3)
      C
      C
      C               ***TEST ID --0=NO TEST***
 6999 IF (FLAG) 700,800,700
      C
      C                **TEST NB FOR LOOP 1 OR 2.  0=LOOP 1**
  700 IF (NB) 701,701,750
  701 IF (ELM(2)) 710,710,702
      C
      C                 *TEST WT(I) WITH WT(I-1)*
  702 IF (ELM(1) - ELM(2)) 710,703,703
      C
      C                **CALC INTERM PT.  USE DELTA B2 OR DELTA NOS2**
      C                 *SET NB TO 1 AND MOVE (I-1) DATA TO (I-2),
      C                 *     (I) DATA TO (I-1)*
  703 NB = 1
      DO 704 I=1,11
      SPB(I+22) = SPB(I+11)
      SPN(I+22) = SPN(I+11)
      SPB(I+11) = SPB(I)
      SPN(I+11) = SPN(I)
      SKLUO(I+22) = SKLUO(I+11)
      SKLLO(I+22) = SKLLO(I+11)
      STLUO(I+22) = STLUO(I+11)
      STLLO(I+22) = STLLO(I+11)
      SKLUO(I+11) = SKLUO(I)
      SKLLO(I+11) = SKLLO(I)
      STLUO(I+11) = STLUO(I)
      STLLO(I+11) = STLLO(I)
  704 CONTINUE
      ELM(3) = ELM(2)
      ELM(2) = ELM(1)
      C
      C              ***TYPE = STR. ID--- 1=CONST NOS, 2=CONST B SEARCH***
      IF (TYPE - 2) 707,705,705
      C
      C                 *CONST B*
  705 DO 706 I=1,11
      SPB(I) = SPB(I) - ACDLB2
      SPN(I) = W(1,I)/SPB(I) - 1.0
  706 CONTINUE
      GO TO 3
      C
      C                 *CONST NOS*
  707 DO 708 I=1,11
      SPN(I) = SPN(I) + ACDLN2
      SPB(I) = W(1,I)/(SPN(I) + 1.0)
  708 CONTINUE
      GO TO 3
      C
      C              ***PT(I) = FIRST POINT OR WT(I) LESS THAN WT(I-1)***
  710 IF (TYPE - 2) 720,711,711
      C
      C               **CONST B SEARCH---TEST IF PT(I) IS AT BMAX**
```

```
CARD NO      ****                          CONTINUE                          ****
    3621       711  IF (B - BSMAX) 712,800,800
    3622       712  ELM(2) = ELM(1)
    3623            DO 713 I=1,11
    3624            SPB(I+11) = SPB(I)
    3625            SPN(I+11) = SPN(I)
    3626            SKLUO(I+11) = SKLUO(I)
    3627            SKLLO(I+11) = SKLLO(I)
    3628            STLUO(I+11) = STLUO(I)
    3629            STLLO(I+11) = STLLO(I)
    3630       713  CONTINUE
    3631         C
    3632            IF (B - BSMAX + ACOLB2) 714,717,800
    3633         C
    3634         C              *TEST B(I) + DELTA B1 WITH BMAX*
    3635         C              *IF LESS THAN BMIN, USE THIS POINT*
    3636       714  IF (B - BSMAX + ACOLB1) 715,715,717
    3637       715  B = B + ACOLB1
    3638            DO 716 I=1,11
    3639            SPB(I) = B
    3640            SPN(I) = W(1,1)/SPB(I) - 1.0
    3641       716  CONTINUE
    3642            GO TO 3
    3643         C
    3644         C              *B(I+1)=B+DELTA B2.  SET NB=1, WT(3)=I*WT(2)*
    3645       717  NB = 1
    3646            ELM(3) = 2.0*ELM(2)
    3647            B = B - ACOLB1 + ACOLB2
    3648            IF (BSMAX - B) 800,715,715
    3649         C
    3650         C           ***CONST NOS SEARCH---TEST IF PT(I) IS AT NOSMIN***
    3651       720  IF (NSTRMN - NSTR) 721,800,800
    3652       721  ELM(2) = ELM(1)
    3653            DO 722 I=1,11
    3654            SPB(I+11) = SPB(I)
    3655            SPN(I+11) = SPN(I)
    3656            SKLUO(I+11) = SKLUO(I)
    3657            SKLLO(I+11) = SKLLO(I)
    3658            STLUO(I+11) = STLUO(I)
    3659            STLLO(I+11) = STLLO(I)
    3660       722  CONTINUE
    3661         C
    3662            NSTR = NSTR - ACOLN1
    3663            IF (NSTRMN - NSTR) 723,723,725
    3664       723  DO 724 I=1,11
    3665            SPN(I) = NSTR
    3666            SPB(I) = W(1,1)/(NSTR + 1.0)
    3667       724  CONTINUE
    3668            GO TO 3
    3669         C
    3670         C              **NEXT PT = PT(I) - DELTA NOS(2)**
    3671         C               *SET NB =1, WT(3)=2*WT(2)**
    3672       725  NB = 1
    3673            ELM(3) = 2.0*ELM(2)
    3674            NSTR = NSTR + ACOLN1 - ACOLN2
    3675            IF (NSTRMN - NSTR) 723,723,800
    3676         C
    3677         C
    3678         C            ***LOOP 2---TEST FOR MIN PT FROM W(I), W(I-1), W(I-2)***
    3679         C              *LOOP FOR FINAL PASS IF MIN IS W(I-1) OR W(I-2)*
    3680         C               *SET FLAG TO 0*
    3681         C               *FOR EQUAL WTS0 USE PT WITH LARGER B*
    3682       750  FLAG = 0.0
    3683            IF (ELM(3) - ELM(2)) 751,754,754
    3684       751  IF (ELM(3) - ELM(1)) 752,800,800
    3685         C
    3686         C              **USE PT(3).  SET B,NOS(I) = B,NOS(I-2)**
    3687       752  DO 753 I=1,11
    3688            SPB(I) = SPB(I+22)
    3689            SPN(I) = SPN(I+22)
    3690            SKLUO(I) = SKLUO(I+22)
    3691            SKLLO(I) = SKLLO(I+22)
```

```
      STLUO(I) = STLUO(I+22)
      STLLO(I) = STLLO(I+22)
  753 CONTINUE
      GO TO 3
C
C             **PT(I) AND PT(I-1)**
  754 IF (ELM(2) - ELM(1)) 755,800,800
  755 DO 756 I=1,11
      SPB(I) = SPB(I+11)
      SPN(I) = SPN(I+11)
      SKLUO(I) = SKLUO(I+11)
      SKLLO(I) = SKLLO(I+11)
      STLUO(I) = STLUO(I+11)
      STLLO(I) = STLLO(I+11)
  756 CONTINUE
      GO TO 3
C
C
C             ***CALC STIFFNESS DATA***
C               *CALL SUBR ASTIFF*
  800 CALL ASTIFF
C
C
  899 RETURN
      END
C*******************************************************************/****
C
C       *****SUBROUTINE ACWSTR*****
C   ***SKIN-STR/RIB SECTION OPTIMIZATION - ADV  COMP. ANALYSIS***
C
C*************************************************************************
C
      SUBROUTINE ACWSTR                                                ACWS0010
C
C           ****SUBR FOR COVER AND ROB SIZING--H/RIB DESIGN****
C
C
      COMMON T(2060),D(2060),CD(2000),ND(100),TH(900),CT(2048)
C
       DIMENSION EL(15),ENP(9),END(5,20),ENX(3,20),ENH(6),ENC(3),DC(100),
      1STRESS(6,11,20),CRLC(7,11),P(20),SPCRUN(11),FCR(10,11),
      2STRING(2,10,11),THICK(4),CNT(5),IEL(15,11),
      3TX(160),TXS(100),
      4SKOOU(11),SKOOL(11),STROU(11),STROL(11),
      5FSKU(11),FSTU(11),FSKL(11),FSTL(11),
      6ESK(20),STFNH(5),STFNF(5),
      7SKLUO(33),SKLLO(33),STLUO(33),STLLO(33),
      8PSK(20),PSTR(20),
      9APRTID(12)
      A,BRRU(11),BRRL(11)
C
       EQUIVALENCE (EL(1),T(1300)),(ENP(1),D(1195)),(END(1,1),TH(80)),
      1(ENX(1,1),TH(701)),(STRESS(1,1,1),CT(1)),(CRLC(1,1),T(960)),
      2(P(1),T(1096)),(SPCRUN(1),T(1632)),(FCR(1,1),T(1100)),
      3(STRING(1,1,1),T(1678)),(THICK(1),T(1916)),(CNT(1),T(1941)),
      4(TX(1),CD(1)),(TXS(1),CD(161)),
      5(XSTRU,CNT(1)),(XSTRL,CNT(2)),(BRMIN,CNT(3)),(BRMAX,CNT(4)),
      6(BMMAX,CNT(7)),(BMMIN,CNT(40)),(BFMAX,CNT(41)),(BFMIN,CNT(42)),
      7(NSTR,CNT(21)),(C3,CNT(13)),(C8,CNT(23)),
      8(SPCODE,ND(93)),(ILCASE,ND(94)),(ITYPE,ND(96)),
      9(APRTID(1),T(1070)),(NSTAT,ND(95)),(NMAX,ND(3))
      A,(DC(1),D(1401)),(STFNH(1),D(1390)),(STFNF(1),D(1353))
      B,(SKLUO(1),CD(261)),(SKLLO(1),CD(294))
      C,(STLUO(1),CD(327)),(STLLO(1),CD(360)),(CFIX,D(1407))
C
       EQUIVALENCE (ENH(1),D(1184)),(ENC(1),CT(2043)),(IEL(1,1),TH(1)),
      1(NS,CNT(24)),(ICPNL1,CNT(3)),
      2(CFRIB,D(1400)),(DBRHO,D(1404)),(PFFSCV,CT(2047)),(PFFSSP,CT(2048)),
      4(SKOOU(1),TH(168)),(STROU(1),TH(177)),
      5(FSKU(1),TH(188)),(FSTU(1),TH(199)),(SKOOL(1),TH(210)),
      8(STROL(1),TH(221)),(FSKL(1),TH(232)),(FSTL(1),TH(243)),
```

CARD NO **** CONTENTS ****

```
     7(NSTIFF,CNT(48)),
     8(NSTIFF,ND(33)),(ILS,ND(34)),(NLS,ND(35)),(NLR,ND(36)),
     9(ISKIN,ND(32)),(LCCR,ND(29))
     A,(PSK(1),TX(10)),(PSTR(1),TX(12)),(ASAL,TX(6)),(LSTRCR,ND(37))
     B,(PHOTS,TX(76)),(DOTA,TX(78))
     C,(BRRU(1),TH(254)),(CPRL(1),TH(265))
C
      EQUIVALENCE (BS,TX(30)),(WIDE,TX(31)),(ELL,TX(32)),(ELO,TX(33)),
     1(EMO,TX(34)),(ENO,TX(35)),(ELSK,TX(36)),(EMSK,TX(37)),
     2(ENSK,TX(38)),(GELL,TX(39)),(ASTRA,TX(40)),(SPMNL,TX(41)),
     3(DLSK1,TX(42)),(SKLUMN,TX(43)),(SKLLMN,TX(44)),(STRLUM,TX(45)),
     4(STRLLM,TX(46)),(BRIDR,TX(47)),(DLSTRL,TX(48)),(ASTRO,TX(49)),
     5(STRLO TX(50)),(STRLTO,TX(51)),(BRIBMN,TX(52)),(BRIBMX,TX(53)),
     6(BRIB,TX(54)),(ASTR,TX(55)),(STRL,TX(56)),(STRLT,TX(57)),
     7(AESTR,TX(58)),(TPSTR,TX(59)),(TSTR,TX(60)),(FSTR,TX(61)),
     8(BH,TX(62)),(BT,TX(63)),(ISTR,TX(64)),(BAR,TX(65)),
     9(YPLATE,TX(66)),(TRIB,TX(67)),(EIRECD,TX(68)),(EIRIB,TX(69))
     A,(ERID,TX(70)),(TBTOT,TX(71)),(TBCOV,TX(72)),(TBRIB,TX(73))
     B,(TBFIL,TX(74)),(TBATT,TX(75))
     C,(ESK(1),TX(81)),(TSK,TX(4)),(ASKT,TX(5)),(DLEMI,TX(11))
     D,(DLENI,TX(12)),(PSKCRL,TX(14)),(PSTCRL,TX(15))
     E,(PCCRI,TX(10)),(PSCRI,TX(19)),(RSUPOA,TX(8)),(RSTPOA,TX(9))
     F,(STFNT,TX(79)),(TSTRO,TX(80))
     G,(BML,TXS(30)),(BMT,TXS(31)),(BML,TXS(32))
C
C
      REAL ISTR,NSTR,IEL
C
      INTEGER SPCODE,TYPE
C
C
C
C          ****M/RIB STATION ANALYSIS -- TIP TO ROOT****
C           ***SETUP INITIAL EST FOR SKIN AND STR L-PLIES***
C              **SELECT STA(I) STARTING L-PLIES AS LARGER OF--
C             *1.  FINAL SKIN/STR L-PLIES FOR BSTR PASS J-1.
C             * 2.  CURRENT PASS STA(I-1) FINAL L(PLIES LESS 1 OR IF
C             *     CURRENT TOTAL ST PLIES LESS THAN OUTBD
C              *    START AT BASIC MIN L-PLIES FOR CURRENT STATION*
C             *3.  MIN SPECIFIED L-PLIES--SETUP IN L-PLY ARRAYS*
C
  100 SKLUMN = SKLUO(NSTAT)
      SKLLMN = SKLLO(NSTAT)
      STRLUM = STLUO(NSTAT)
      STRLLM = STLLO(NSTAT)
C
C               **TEST FOR TIP STATION**
      IF (I1 - NSTAT) 101,101,102
C
C               **INITIAL SKIN DELTA M-PLIES = 0.0 FOR TIP STATION**
  101 TXS(21) = 0.0
      TXS(22) = 0.0
      GO TO 200
C
C            ***STATIONS 1-10   CHECK FOR OUTBD L-PLY VALUES FOR
C              *   CURRENT STATION STARTING VALUES***
  102 SLKO = TXS(12) - 1.0
      SLTO = TXS(13) - 1.0
      SLDO = TXS(11) - EL(1)
      IF (SLDO) 103,103,107
  103 IF (SKLUMN - SLKO) 104,105,105
  104 SKLUMN = SLKO
  105 IF (STRLUM - SLTO) 106,107,107
  106 STRLUM = SLTO
C
  107 SLKO = TXS(17) - 1.0
      SLTO = TXS(18) - 1.0
      SLDO = TXS(16) - EL(4)
      IF (SLDO) 109,109,200
  109 IF (SKLLMN - SLKO) 110,111,111
  110 SKLLMN = SLKO
```

```
CARD NO  ****                          CONTENTS                          ****
3034      111  IF (STRLLM - SLTO) 112,200,200
3035      112  STRLLM = SLTO
3036      C
3037      C
3038      C            ***COVER SIZING LOOP--INITIAL COVER = UPPER.  ISKIN=1***
3039       200 ISKIN = 1
3040           XSTIFF = XSTRU
3041           BRIBMX = BRMAX
3042           BRIBMN = BRMIN
3043           ELL = EL(1)
3044           EMO = EL(2)
3045           END = EL(3)
3046           STRLO = STRLUM
3047           SKOML = SKLUMN
3048           DLEMI = TXS(21)
3049           GO TO 300
3050      C
3051      C            ***LOWER COVER SIZING LOOP--ISKIN = 2***
3052       250 ISKIN = 2
3053           XSTIFF = XSTRL
3054           BRIBMX = BRIB
3055           BRIBMN = BRIB
3056           ELL = EL(4)
3057           EMO = EL(5)
3058           END = EL(6)
3059           STRLO = STRLLM
3060           SKOML = SKLLMN
3061           DLEMI = TXS(22)
3062           GO TO 300
3063      C
3064      C            ***SKIN SIZING LOOP--L(PLY) SEARCH--SETUP STR GEOM DATA***
3065      C            ***STR LT K(ISTR)=0 FOR ISTR, *STFNH FOR Z, T, HAT***
3066       300 NSTIFF = XSTIFF
3067           STFNT = 0.0
3068           IF (2 - NSTIFF) 3000,3000,3001
3069       3000 STFNT = STFNH(NSTIFF)
3070      C
3071      C            ***ABS MIN SKIN L-PLIES = 1***
3072       3001 IF (SKOML - 1.0) 3002,3003,3003
3073       3002 SKOML = 1.0
3074      C
3075      C             **L-PLY SEARCH ID=ILS.  0=INITIAL PASS**
3076      C              *DELTA L(I) = 2 OR 4*
3077       3003 ILS = 0.0
3078           DLSKI = 4.0
3079           IF (ELL - SKOML - 4.0) 301,302,302
3080       301 DLSKI = 2.0
3081      C
3082      C            **SETUP AVAILABLE STR AREA**
3083       302 ELO = SKOML
3084      C
3085       304 DLEMI = INT(CB*(ELO + EMO + DLEMI) + C3) - END
3086           IF (DLEMI) 3040,3041,3041
3087       3040 DLEMI = 0.0
3088       3041 TSTRO = ENP(9)*STRLO
3089           STRLTO = BMMIN*STFNH(NSTIFF) + BFMIN*STFNF(NSTIFF) + STFNT*TSTRO
3090           ASTRO = TSTRO*STRLTO
3091           STRL = STRLO
3092           TSTR = TSTRO
3093           STRLT = STRLTO
3094           ASTR = ASTRO
3095           DELL = ELL - ELO
3096           IF (DELL) 320,320,305
3097       305 ASTRA = 2.0*DELL*ENP(9)*DS
3098           IF (ASTR - ASTRA) 306,320,320
3099      C
3100      C            **CALC STR CONFIG FROM AVAILABLE L-SKIN PLY AREA**
3101       306 ASTR = ASTRA
3102       3060 STRL = INT(ASTR/(ENP(9)*BMMIN))
3103           IF (2 - NSTIFF) 307,307,308
3104       307 STRL = ENP(9)*(STFNH(NSTIFF)*BMMIN + STFNF(NSTIFF)*BFMIN)
```

```
CARD NO  ****                          CONTENTS                          ****
 3905          STRLT = STFNT*ENP(9)*ENP(9)
 3906          STRL = (SQRT(STRL*STRL + 4.0*STRLT*ASTR) - STRL)/2.0*STRLT
 3907          STRL = INT(STRL)
 3908      300 IF (STRL - STRLO) 309,310,310
 3909      309 STRL = STRLO
 3910      310 TSTR = ENP(9)*STRL
 3911          STRLT = BHMIN*STFNH(NSTIFF) + BFMIN*STFNF(NSTIFF) + STFNT*TSTR
 3912          STRLTO = STRLT
 3913          ASTR = TSTR*STRLT
 3914      C
 3915      C            ***CHECK SKIN-STR CONFIG FOR LOAD DIST AND P/A STRESSES***
 3916      C            ***ASSUME L-STR = MIN UNTIL P/A STRESSES ARE SATISFIED***
 3917      C             **RESIZE AS REQD BY INCREASING STR AREA--L PLIES**
 3918      320 NLS = 0.0
 3919          CALL ACMRSK(ASTR,STRL)
 3920          IF (1.0 - RSKPOA) 321,322,322
 3921      321 IF (1.020 - RSKPOA) 330,360,360
 3922      322 IF (1.0 - RSTPOA) 323,400,400
 3923      323 IF (1.020 - RSTPOA) 330,360,360
 3924      C
 3925      C             **SEARCH FOR STR AREA**
 3926      C              *INITIAL DELTA STR L-PLY=16 MIN OR STRL)*
 3927      330 DLSTRL = 16.0
 3928          IF (DLSTRL - STRL) 331,332,332
 3929      331 DLSTRL = STRL
 3930      332 STRL = STRL + DLSTRL
 3931          TSTR = ENP(9)*STRL
 3932          STRLT = BHMIN*STFNH(NSTIFF) + BFMIN*STFNF(NS    ) + TSTR*STFNT
 3933          ASTR = STRLT*TSTR
 3934          STRLTO = STRLT
 3935      333 CALL ACMRSK(ASTR,STRL)
 3936          IF (1.0 - RSKPOA) 334,335,335
 3937      334 IF (1.020 - RSKPOA) 332,360,360
 3938      335 IF (1.0 - RSTPOA) 336,400,337
 3939      336 IF (1.020 - RSTPOA  332,360,360
 3940      C
 3941      C             **SIZING(1) OR   CHECK STR(L) - .5*DELTA L.**
 3942      337 IF (DLSTRL - 4.0) 338,338,339
 3943      338 STRL = STRL - DLSTRL
 3944          GO TO 360
 3945      C
 3946      C            ***P/A OK FOR PT 1.  CHECK STR GEOM FOR LOCAL STABILITY***
 3947      339 CALL ACSTRO(LSTID)
 3948          IF (LSTID) 340,340,401
 3949      C
 3950      340 DLSTRL = INT(DLSTRL/2.0)
 3951          STRL = STRL - DLSTRL
 3952      341 TSTR = ENP(9)*STRL
 3953          STRLT = BHMIN*STFNH(NSTIFF) + BFMIN*STFNF(NSTIFF) + TSTR*STFNT
 3954          ASTR = STRLT*TSTR
 3955          STRLTO = STRLT
 3956          CALL ACMRSK(ASTR,STRL)
 3957          IF (1.0 - RSKPOA) 342,343,343
 3958      342 IF (1.020 - RSKPOA) 345,360,360
 3959      343 IF (1.0 - RSTPOA) 344,400,337
 3960      344 IF (1.020 - RSTPOA) 345,360,360
 3961      345 IF (4.0 - DLSTRL) 348,360,360
 3962      348 DLSTRL = INT(DLSTRL/2.0)
 3963          STRL = STRL + DLSTRL
 3964          GO TO 341
 3965      C
 3966      C              *NLS = SEARCH CONTROL ID.  0=FIRST PASS*
 3967      C              *   1=RESIZING BY L-PLY INCREASE BY 2*
 3968      C              *   2=RESIZING BY L-STR DECREASE BY 1*
 3969      350 NLS = 0.0
 3970          CALL ACMRSK(ASTR,STRL)
 3971          IF (RSKPOA - 1.0) 351,351,380
 3972      351 IF (1.0 - RSTPOA) 380,400,400
 3973      C
 3974      C             **INCREASE STR L BY 2.  NLS=1**
 3975      380 NLS = 1
```

```
CARD NO  ****                          CONTENTS                          ****
  3976      361 STRL = STRL + 2.0
  3977      362 TSTR = ENP(9)*STRL
  3978          STRLT = BAMIN*STFNH(NSTIFF) + BFMIN*STFNF(NSTIFF) + STFNT*TSTR
  3979          ASTR = TSTR*STRLT
  3980          STRLTO = STRLT
  3981          CALL ACMRSK(ASTR,STRL)
  3982          IF (RSKPOA - 1.0) 363,363,364
  3983      363 IF (1.0 - RSTPOA) 364,366,366
  3984      364 IF (2 - NLS) 365,365,361
  3985      365 STRL = STRL + 1.0
  3986          GO TO 362
  3987        C
  3988        C          ***SIZING OK--RESIZE FOR L-1 IF NLS=1.  SET NLS=2***
  3989      366 IF (NLS - 1) 367,367,400
  3990      367 NL   2
  3991          STRL = STRL - 1.0
  3992          GO TO 362
  3993        C
  3994        C          ***P/A CHECK OK--SETUP FOR STR LOCAL INSTABILITY CHECK***
  3995        C          ***INITIAL STR AREA CONVERGENCE LOOP FOR LOCAL STABILITY**
  3996        C           **SIZE WEB AND FLANGE LENGTHS AND STR PROPERTIES**
  3997      400 TBSTR = ASTR/BS
  3998          CALL ACSTRG(LSTID)
  3999          IF (LSTID) 800,800,401
  4000        C
  4001        C            *MIN INITIAL DELTA L-PLY = 16 OR STR L(1)*
  4002      401 DLSTRL = STRL
  4003          IF (STRL - 16.0) 402,403,403
  4004      402 DLSTRL = 16.0
  4005      403 STRL = STRL + DLSTRL
  4006          TSTR = ENP(9)*STRL
  4007          STRLT = BAMIN*STFNH(NSTIFF) + BFMIN*STFNF(NSTIFF) + TSTR*STFNT
  4008          ASTR = STRLT*TSTR
  4009          STRLTO = STRLT
  4010          CALL ACMRSK(ASTR,STRL)
  4011          CALL ACSTRG(LSTID)
  4012          IF (LSTID) 405,405,404
  4013      404 IF (BOTA - BAOTS - 0.10) 410,410,403
  4014        C
  4015        C          **STR OK.  CHECK AT DELTA L/2**
  4016      405 IF (DLSTRL - 4.0) 406,406,407
  4017      406 STRL = STRL - DLSTRL
  4018          GO TO 410
  4019        C
  4020      407 DLSTRL = INT(DLSTRL/2.0)
  4021          STRL = STRL - DLSTRL
  4022      408 TSTR = ENP(9)*STRL
  4023          STRLT = BAMIN*STFNH(NSTIFF) + BFMIN*STFNF(NSTIFF) + TSTR*STFNT
  4024          ASTR = STRLT*TSTR
  4025          STRLTO = STRLT
  4026          CALL ACMRSK(ASTR,STRL)
  4027          CALL ACSTRG(LSTID)
  4028          IF (LSTID) 405,405,409
  4029      409 IF (BOTA - BAOTS - 0.10) 410,410,4090
  4030      4090 IF (4.0 - DLSTRL) 4091,410,410
  4031      4091 DLSTRL = INT(DLSTRL/2.0)
  4032          STRL = STRL + DLSTRL
  4033          GO TO 408
  4034        C
  4035        C
  4036        C          ***STR AREA TOO SMALL.  INCREASE L-PLIES.  P/A OK***
  4037      410 STRL = STRL + 2.0
  4038          TSTR = ENP(9)*STRL
  4039          STRLT = BAMIN*STFNH(NSTIFF) + BFMIN*STFNF(NSTIFF) + STFNT*TSTR
  4040          ASTR = TSTR*STRLT
  4041          TBSTR = ASTR/BS
  4042          CALL ACMRSK(ASTR,STRL)
  4043          CALL ACSTRG(LSTID)
  4044          IF (LSTID) 411,411,410
  4045      411 STRL = STRL - 1.0
  4046      412 TSTR = ENP(9)*STRL
```

```
CARD NO      ****                    CONTENTS                    ****
 4047            STRLT = EXMIN*STIFF(4)*STIFF) + BFMIN*STIFB(INSTIFF) + STFNT*TSTR
 4048            ASTR = TSTR*STRLT
 4049            TBSTR = ASTR/DS
 4050            CALL ACMRSK(ASTR,STRL)
 4051            CALL ACSTRG(LSTID)
 4052            IF (LSTID) 600,600,413
 4053          413 STRL = STRL + 1.0
 4054            GO TO 412
 4055          C
 4056          C
 4057          C          ***CHECK GENL INSTABILITY AND SIZE RIBS FOR CRUSHING
 4058          C            *   AND COLUMN SUPPORT***
 4059          C           **STRINGER AREA CONTROL ID=NLR**
 4060          600 NLR = 0.0
 4061            RIBCUT = 0.0
 4062          601 EMSK = EMO * DLEMI
 4063            ENSK = END * DLENI
 4064            BRIB = 0.0
 4065          C
 4066          C           **MIN COL LENGTH FOR ALL LOADS**
 4067            DO 604 L=1,ILCASE
 4068            IF (STRESS(ISKIN,NSTAT,L)) 604,604,602
 4069          602 AESTI = ENO(1,L)*TDSTR
 4070            YPLATI = AESTI*(YBAR*TSK/2.0)/(AESTI + ESK(L)*TSK)
 4071            DII = ENO(1,L)*ISTR/DS + ESK(L)*TSK**3/12.0 + AESTI*(YBAR - YPLATI
 4072           1)**2 + ESK(L)*TSK*YPLATI**2
 4073            BR = SQRT(CFI)*9.869*DII/STRESS(ISKIN,NSTAT,L))
 4074            IF (BRIB) 603,603,6020
 4075          6020 IF (BR - BRIB) 603,604,604
 4076          603 BRIB = BR
 4077            BRIBR = BR/BRMAX
 4078            IF ( BRIBR .LT. 1.0 ) BRIBR = 1.0
 4079            YPLATE = YPLATI
 4080            AESTR = AESTI
 4081          604 CONTINUE
 4082          C
 4083          C           **CHECK IF COL LENGTH IS BETWEEN MIN/MAX REQD***
 4084            IF (BRIB - BRIBMX) 605,610,610
 4085          605 IF (BRIB - BRIBMN) 606,6100,6100
 4086          C
 4087          C           **COL LENGTH LESS THAN REQD.  SIZE WITH LARGER STR**
 4088          C            *CHECK STATUS OF STR ID NLR*
 4089          606 IF (2 - NLR) 607,607,609
 4090          607 STRL = STRL + 1.0
 4091            GO TO 609
 4092          608 NLR = 1
 4093            STRL = STRL + 2.0
 4094          609 TSTR = ENP(9)*STRL
 4095            STRLT = BMMIN*STIFB(INSTIFF) + BFMIN*STIFF(INSTIFF) + STFNT*TSTR
 4096            STRLTO = STRLT
 4097            ASTR = TSTR*STRLT
 4098            TBSTR = ASTR/BS
 4099            CALL ACMRSK(ASTR,STRL)
 4100            CALL ACSTRG(LSTID)
 4101            GO TO 601
 4102          C
 4103          C           **COL LENGTH OK.  CHECK STATUS OF STR ID NLR**
 4104          C            *EXIT ON 0 OR 2.  LOOP ON 1**
 4105          610 BRIB = BRIBMX
 4106          6100 IF (NLR - 1) 612,611,612
 4107          611 NLR = 2
 4108            STRL = STRL - 1.0
 4109            GO TO 609
 4110          C
 4111          C          ***STR AREA OK.  DESIGN RIBS FOR STRENGTH AND STIFFNESS***
 4112          612 SPCRUH(NSTAT) = 0.0
 4113            PH = 0.0
 4114            ELSK = ELO
 4115          C
 4116            DO 616 L=1,ILCASE
 4117            PIL) = 0.0
```

CARD NO **** CONTENTS ****

```
      IF (STRESS(ISKIN,NSTAT,L)) 6 0,616,613
  613 PP = STRESS(ISKIN,NSTAT,L)**2*ERIB/((TSK*ESK(L) + TBSTR*END(1,L))*
     1HS)*2.0
      IF (P(L) - PP) 614,616,616
  614 P(L) = PP
      PL = INT(P(L)/ENX(1,L) + C3)
      IF (PM - PL) 615,615,616
  615 SPCRUH(NSTAT) = P(L)
      CRLC(7,NSTAT) = L
      PM = PL
  616 CONTINUE
C
C              **SETUP L AND M PLIES FOR RIBS,F/SPAR AND R/SPAR**
C               *MIN NO OF L-PLIES = 1*
C              **MIN M-PLIES FOR RIBS = 1.0***
C              **CHECK FOR TENSION COVER**
      IF (I - ISKIN) 6160,6160,619
 6160 EL(10) = PM
      EL(11) = 1.0
      IF (EL(10) - 1.0) 617,618,618
  617 EL(10) = 1.0
  618 EL(7) = EL(10)
      EL(13) = EL(10)
      EL(12) = XN(10,11)
      EL(9) = XN(7,8)
      EL(15) = XN(13,14)
      GO TO 620
C
C              **TENSION COVER.  M-PLIES OF, CHECK L-PLIES**
  619 IF (EL(10) - PM) 6190,620,620
 6190 EL(10) = PM
      EL(12) = XN(10,11)
C
C             ***RIB WEB DESIGN***
  620 FACT = 2.5
      IF (SPCODE - 1) 6200,6200,6201
 6200 FACT = 1.21
C
C             ***SETUP ALLOWABLE STABILITY DATA AT MAX CRUSHING LOAD***
 6201 LCASE = CRLC(7,NSTAT)
      CALL CKSTAB (R,HS,EL(10),EL(11),EL(12),P(LCASE),DC(3),FACT,FCRC,FC
     1RS,LCASE,TCPNL(I))
      FCR(7,NSTAT)=FCRC
      FCR(8,NSTAT)=FCRS
C
C              **CHECK ALL LOADS FOR STABILITY**
      DO 625 LCASE=1,ILCASE
      I = 1
  621 CALL CKSTAB (R,HS,EL(10),EL(11),EL(12),P(LCASE),DC(3),FACT,FCRC,FC
     1RS,LCASE,TCPNL(I))
      IF (1.0 - R) 622,623,623
  622 I = 2
      EL(11) = EL(11) + 1.0
      EL(12) = XN(10,11)
      GO TO 621
C
  623 IF (2 - I) 624,624,625
  624 FCR(7,NSTAT)=FCRC
      FCR(8,NSTAT)=FCRS
      CRLC(5,NSTAT) = 20 + LCASE
  625 CONTINUE
C
C
C             ***DESIGN RIBS FOR SUPT STIFFNESS**
  630 TRIB = 2.0*ENP(9)*(EL(10) + 2.0*EL(11) + EL(12))
      DO 634 L=1,ILCASE
      IF (STRESS(ISKIN,NSTAT,L)) 634,634,631
  631 EIREQD = WIDE**4/125.0*STRESS(ISKIN,NSTAT,L)/BRIB
  632 ERIB = (EL(12)*END(1,L) + 2.0*EL(11)*END(4,L) + EL(10)*END(2,L))*E
     1NP(9)/TRIB*2.0
      EIRIB = ERIB*(HS**3/12.0*TRIB + 2.0*TRIB*(HS/2.0)**2)
```

```
CARD NO  ****                          CONTENTS                          ****
 4189          IF (ETRIB - EIRCOD) 633,634,634
 4190     633  EL(1) = EL(1) + 1.0
 4191          EL(2) = XN(10,1)
 4192          CRLC (5,NSTAT) = 20 + L
 4193          GO TO 632
 4194     634  CONTINUE
 4195     C
 4196     C            ***CALC TBAR RIB AND TOTAL TBAR***
 4197     C             **INCLUDE COVER ATT FILLER, ATT AND PROTECTIVE FINISH*
 4198     640  CF = CFRIB
 4199          TBRIB = 0.0
 4200          IF (1.0 - SPCODE) 641,642,642
 4201     641  CF = 1.0
 4202          TBRIB = HS/ENP(8)*(TCPNL(*ENC(1) + DORHO)
 4203     642  TBRIB = (HS*CF*(TRIB + PFFSSP/ENP(8)) + 2.0*TRIB + TBRIB)/BRIB
 4204          TBCOV = TSK + PFFSCV/ENP(8) + NSTR/WIDE*(ASTR*(PFFSSP/ENP(8)*BALT)
 4205          TBFIL = 4.0*ELO*ENP(9)
 4206          TBATT = 0.01473/BRIB*ITSK + TBFIL + TRIB + 0.625)/ENP(8)
 4207          TBFIL = TBFIL/BRIB
 4208     C
 4209          TBTOT = TBCOV + TBRIB + TBFIL+ TBATT
 4210     C    RIBCUT = 0.0 INDICATES 1ST RIB SIZING
 4211     C    RIBCUT = 1.0 INDICATES 2ND, 3RD, ETC. RIB SIZING IN THE SEARCH FOR
 4212     C    MINIMUM TBTOT
 4213     C    RIBCUT = 2.0 INDICATES THAT THE MINIMUM TBTOT HAS BEEN FOUND
 4214     C
 4215     6420 IF ( RIBCUT - 1.0 ) 6430,6425,6435
 4216     6430 IF ( BRIB .GE. BRIBMX ) GO TO 6435
 4217     6431 TBTOT1 = TBTOT
 4218          ASTR1 = ASTR
 4219          STRL1 = STRL
 4220          STRL = STRL + 1.0
 4221          RIBCUT = 1.0
 4222          GO TO 609
 4223     6425 IF ( TBTOT1 - TBTOT ) 6440,6435,6431
 4224     6440 RIBCUT = 2.0
 4225          TBTOT =TBTOT1
 4226          ASTR = ASTR1
 4227          STRL = STRL1
 4228          GO TO 609
 4229     C
 4230     C            ***COVER SIZING COMPLETED--CHECK FOR L-SKIN SEARCH**
 4231     C
 4232     C
 4233     C***CCC***
 4234     6435 NN = 0
 4235     C
 4236     8000 IF (APRTID(12)) 8009,8009,8001
 4237     8001 WRITE (6,801)ILS,NSTAT,NMAX,ISKIN
 4238     801  FORMAT (26H1  ***ACWSTR SUBR-----ILS=12,6H  STA=12,6H   PT=14,10H
 4239         )  COV ID=12,/6H0  TX )
 4240     802  FORMAT (6H0  TXS)
 4241     803  FORMAT (3X,13,3X,5E16.8)
 4242     C
 4243          DO 804 N=1,160,5
 4244          K = N + 4
 4245          WRITE (6,803)N,(TX(I),I=N,K,1)
 4246     804  CONTINUE
 4247     C
 4248          WRITE (6,802)
 4249          DO 805 N=1,100,5
 4250          K = N + 4
 4251          WRITE (6,803)N,(TXS(I),I=N,K,1)
 4252     805  CONTINUE
 4253     C
 4254     8009 IF (NN) 700,700,999
 4255     C
 4256     C***CCC***
 4257     C
 4258      700  IF (ILS - 1) 701,702,730
 4259     C
```

CARD NO **** CONTENTS ****

```
C               **INITIAL SIZING--SAVE TBAR TOTAL,(L,M,N) SKIN
C                *   AND STR CONFIG DATA**
C               **INCREASE L-SKIN BY 1 FOR SLOPE TEST**
C                *   SET ILS = 1*
  701 ILS = 1
 7011 TXS(2) = ELO
      ELO = ELO + 1.0
 7010 TXS(1) = TBTOT
      TXS(3) = EMSK
      TXS(4) = ENSK
      TXS(5) = TSK
      TXS(6) = ASTR
      TXS(7) = STRL
      TXS(8) = STRLT
      TXS(9) = TSTR
      TXS(10) = BRIB
      TXS(23) = DLEMI
      TXS(24) = DLENI
      GO TO 304
C
C               **SECOND PASS--CHECK WT SLOPE**
  702 IF (TXS(1) - TBTOT) 703,710,732
C
C               **USE PT 1.  RESET DATA AND RE-CALC**
  703 ELO = ELO - 1.0
      ASTR = TXS(6)
      STRL = TXS(7)
      STRLT = TXS(8)
      DLEMI = TXS(23)
      DLENI = TXS(24)
      ILS = 4
      GO TO 350
C
C              ***FINAL COVER DESIGN--SAVE DATA AND CHECK FOR
C                 *   TENSION COVER DESIGN***
  710 STRING(ISKIN,3,NSTAT) = YPLATE
      STRING(ISKIN,4,NSTAT) = ISTR
      STRING(ISKIN,5,NSTAT) = YBAR
      STRING(ISKIN,6,NSTAT) = BW
      STRING(ISKIN,7,NSTAT) = BF
      STRING(ISKIN,8,NSTAT) = BWT
      STRING(ISKIN,9,NSTAT) = ASTR
      STRING(ISKIN,10,NSTAT) = BWL
      IF (ISKIN - 1) 711,711,712
  711 STRING(1,1,NSTAT) = BS
      STRING(1,2,NSTAT) = BRIB
      STRING(2,1,NSTAT) = FSTR
      BRRU(NSTAT) = BRIBR
C
C               **SAVE CRITICAL LOAD DATA**
      SKXXU(NSTAT) = PSKCRL/BS
      STNXU(NSTAT) = PSTCRL/BS
      FSKU(NSTAT) = PSKCRL/ASKL
      FSTU(NSTAT) = PSTCRL/ASTR
      CRLC(3,NSTAT) = LCCR
      FCR(1,NSTAT) = PCCRI
      FCR(2,NSTAT) = PSCRI
C
C               **SAVE STA(I) VALUES FOR SETUP OF STARTING VALUES AT
C                *   STA(I+1)***
      TXS(11) = ELL
      TXS(12) = ELSK
      TXS(13) = BWL
      TXS(14) = ASTR
      TXS(15) = STRLT
      TXS(21) = DLEMI
      EL(1) = ELSK
      EL(2) = EMSK
      EL(3) = ENSK
C
      GO TO 250
```

CARD NO **** CONTENTS ****

```
      C
      712  STRING(2,2,NSTAT) = FSTR
           BRK(NSTAT) = BRIBR
      C
      C             **MAX TENSION STRESS FOR LOWER COVER**
           SKNOL(NSTAT) = PSK(LSTRCR)/BS
           STNOL(NSTAT) = PSTR(LSTRCR)/BS
           FSKL(NSTAT) = PSK(LSTRCR)/ASPL
           FSTL(NSTAT) = PSTR(LSTRCR)/ASTR
           FCR(3,NSTAT) = PCCRI
           FCR(4,NSTAT) = PSCRI
      C
      C             **SAVE STA(I) VALUES FOR SETUP OF STARTING VALUES AT
      C               *  STA(I+1)***
           TXS(16) = ELL
           TXS(17) = ELSK
           TXS(18) = BWL
           TXS(19) = ASTR
           TXS(20) = STRLT
           TXS(22) = DLEMI
           EL(4) = ELSK
           EL(5) = EMSK
           EL(6) = ENSK
      C
           GO TO 800
      C
      C             ***ILS = 2,3,4.  CHECK STATUS***
      730  IF (ILS - 3) 731,740,710
      C
      C             ***ILS = 2.  CHECK TBAR SLOPE***
      731  IF (TBTOT - TXS(1)) 732,733,734
      C
      C             ***INCREASE SKIN L-PLIES
      C
      732 ILS = 2
           TXS(2) = ELO
           ELO = ELO + DLSK1
           GO TO 7010
      C
      C             ***MIN BETWEEN LSK(I-1) AND LSK(I)***
      C              **SETUP SECOND LOOP CONTROL ON ILS=3***
      733 ELOMAX = ELO
           GO TO 7340
      734 ELOMAX = ELO - 1.0
      7340 ELO = TXS(2) + 1.0
           ILS = 3
           GO TO 304
      C
      C             ***ILS=3.  LOOP 2 SEARCH***
      C              **CHECK SLOPES ***
      C
      740 IF ( TBTOT - TXS(1) ) 742,710,703
      742 IF ( ELO - ELOMAX ) 7011,710,710
      C
      800  CONTINUE
      C
      C***CCC***
           NN = 1
           GO TO 8000
      C***CCC***
      C
      C
      C
      900  RETURN
           END
      C*************************************************************** ss.****
      C
      C        *****SUBROUTINE ACMPSK*****
      C   ***SKIN-STR LOAD DIST, SKIN STABILITY - ADV. COMP. ANALYSIS***
      C
      C*****************************************************************
```

CARD NO **** CONTENTS ****

```
C
      SUBROUTINE ACMRSK(ASTR,STRL)
C
C          ***SUBR TO CHECK AND SIZE SKINS FOR STABILITY AND
C               CALC RESULTING LOAD DISTRIBUTIONS BETWEEN SKIN-STR
C               BASED ON FINAL SKIN(L,M,N) AND GIVEN STR AREA***
C
C           **STR AREA AND NO OF SKIN L-PLIES REMAINS CONSTANT**
C            *M,N(SKINS) VARIES AS NEED TO SATISFY STABILITY
C               AND INTERACTION EQUATION --(RC + RS**2) = 1.0**
C
      COMMON T(20601),D(20601),CD(2500),ND(1001),TH(900),CT(20+8)
C
      DIMENSION ENP(9),END(5,20),E(3,3,20),STRESS(6,11,20),
     1G(20),CNT(9),
     2TX(160),ESK(20),PSK(20),PSTR(20),SHR(20),
     3EBOT(20),
     4APRTID(12)
C
      EQUIVALENCE (ENP(1),D(1155)),(END(1,1),TH(601)),(G(1),CT(2023)),
     1(STRESS(1,1,1),CT(1)),(ENX(1,1),TH(701)),(CNT(1),T(1541)),
     2(C3,CNT(13)),(C8,CNT(23)),(TX(1),CD(1)),(ESK(1),TX(81)),
     3(PSK(1),TX(101)),(PSTR(1),TX(121)),(SHR(1),TX(141)),
     4(BS,TX(30)),(ELO,TX(33)),(EM3,TX(34)),(END,TX(35)),
     5(EMI,TX(1)),(ENI,TX(2)),(SIGSK,TX(3)),(TSK,TX(4)),(ASKT,TX(5)),
     6(ASKL,TX(6)),(ASTRL,TX(7)),(PSXPOA,TX(8)),(RSTPOA,TX(9)),
     7(RAE,TX(10)),(EOO,TX(29)),
     8((ISKIN,ND(32)),(ILCASE,ND(41)),(LCCR,ND(29)),
     9(APRTID(1),T(1070)),(NMAX,ND(3)),(NSTAT,ND(55)),(NMAXI,ND(30))
C
      EQUIVALENCE (ESKCRL,TX(13)),(PSKCRL,TX(14)),(PSTCRL,TX(15)),
     1(PMXCRL,TX(16)),(QSKCRL,TX(17)),(PCCRI,TX(18)),(PSCRI,TX(19)),
     2(RMAX,TX(20)),(RI TX(21)),(RCI,TX(22)),(RSI,TX(23)),
     3(PC1,TX(24)),(PMX1,TX(25)),(PMXY,TX(26)),
     4(DLEMI,TX(11)),(DLENI,TX(12)),
     5(FSTR,TX(61)),(BMOTS,TX(76)),(BFOTS,TX(77)),
     6(LSTRCR,ND(37)),
     7(DSTRC5,D(1598)),(DSTRC6,D(1599)),
     8(EBOT(1),TH(819)),
     9(RASKI,TX(27)),(RASTI,TX(28))
     A,(DPOAEP,D(445))
C
C
C            ***INITIALIZE DATA***
    1 EMI = EMO + DLEMI
      ENI = ENO + DLENI
      TSK = 2.0*ENP(9)*(ELO + 2.0*EMI + ENI)
      ASKT = TSK*BS
      NMAX = NMAX + 1
      NMAXI = 0.0
C
C             **PRINT INITIAL DATA ON APRTID(NSTAT) = I**
      IF (APRTID(NSTAT)) 100,100,193
  190 WRITE (6,191)NSTAT,NMAX,ISKIN,BS,ELO,EMO,ENO,TSK ASKT,ASTR,STRL
  191 FORMAT (1H0,//2HO ***ACMRSK SUBR---STA=I2,6H PT=I4,10H COV I
     1D=I2,8H BSTR=F8.3,4H ***,/8X,3F6.1,3F9.4,F6.1)
C
C            ***STABILITY CHECK--SIZING LOOP. NL=1***
  100 NL = 1
      NCR = 0.0
      LCCR = 0.0
      SKRMX = 0.0
      PMXCRL = 0.0
      RMAX = 0.0
C
  109 DO 120 N=1,ILCASE
  110 E11 = (ELO*END(1,N) + 2.0*EMI*END(4,N) + ENI*END(2,N))*ENP(9)*2.0
      E22 = (ELO*END(2,N) + 2.0*EMI*END(4,N) + ENI*END(1,N))*2.0*ENP(9)
      E12 =(G(NI)*(ELO+ENI) + 0.5*EMI*(END(1,N) + END(2,N) -2.
     1*END(3,N) ))*2.*ENP(9)
      E13 = ((ELO+ENI)*END(3,N) + END(5,N)*EMI*2. )*2.*ENP(9)
```

CARD NO	**** CONTENTS ****
9473	EOO = (E11-E12/E22*E12)/TSA
9474	C
9475	XX= TSA*TSA/12
9476	D11 = E11*XX
9477	D22 = E22*XX
9478	D12 =(E12+2 *G12)*XX
9479	C
9480	C **CALC LOAD RATIOS**
9481	PNXYI = STRESS(I3,NSTAT,N)
9482	PNXI = STRESS(ISKIN,NSTAT,N)
9483	PCI = 65*PNXI
9484	RAE = ASKT/ASTR*EOO/ENO(I,N)
9485	SKR(N) = RAE/(1.0 + RAE)
9486	IF (SKRMX - SKR(N)) 111,1110,1110
9487	111 SKRMX = SKR(N)
9488	1110 PSK(N) = SKR(N)*PCI
9489	PSTR(N) = PCI - PSK(N)
9490	PNXI = PNXI*SKR(N)
9491	IF (PNXI) 112,1120,1120
9492	112 PNXI = 0.0
9493	1120 ESK(N) = EOO
9494	NMAX1 = NMAX1 + 1
9495	C
9496	IF (NCR) 113,113,115
9497	113 IF (PNXCRL - PNXI) 114,115,115
9498	114 PNXCRL = PNXI
9499	LCCR = N
9500	QSKCRL = FNXYI
9501	PSKCRL = PSK(N)
9502	PSTCRL = PSTR(N)
9503	ESKCRL = ESK(N)
9504	C
9505	C **CHECK STABILITY**
9506	115 THETA = SQRT(D11*D22)/D12
9507	PCCRI = 19.739/BS*D12/BS*(THETA + 1.0)
9508	IF (THETA - 1.0) 116,116,117
9509	116 PSCRI = 4.0/BS*SQRT(D22*D12)/BS*((.938*THETA + .582)*THETA + 11.7)
9510	GO TO 118
9511	117 PSCRI = 4.0/BS*SQRT((THETA*D12*D22)/BS*18.125 + 5.05/THETA)
9512	C
9513	C **INTERACTION RATIOS**
9514	118 RCI = PNXI/PCCRI
9515	RSI = ABS(PNXYI/PSCRI)
9516	RI = RCI + RSI*RSI
9517	C
9518	C **PRINT POINT DATA ON APRT(IDINSTAT) = 1**
9519	IF (APRT(IDINSTAT)) 119,119,1180
9520	1180 WRITE (6,1181)N,NMAX1,ELO,EMI,ENI,TSK,ASKT,EOO,ENO(I,N),RAE,SKR(N)
9521	1,PSK(N),PSTR(N),PNXI,PNXYI,RI,RCI,RSI,FMAX,SKRMX,PCCRI,PSCRI,D11,D
9522	212,D22,THETA,E11,E22,E12,G12
9523	1181 FORMAT (1H0,2X,I2,2X,I4,2X,3F7.1,2F9.4,4E16.8,/12X,2F11.1,2F9.1,4E
9524	116.8,/12X,F9.4,13X,2F9.1,4E16.8/52X,4E16.8)
9525	C
9526	C **CHECK FOR MARGIN**
9527	119 IF (1.0 - RI) 120,123,123
9528	120 IF (RI - 1.0 - DPDAEP) 121,121,122
9529	121 RI = 1.0
9530	C
9531	C **STABILITY CRITICAL--ADD M-PLIES AND CALC NEW N-PLIES**
9532	122 EMI = EMI + 1.0
9533	ENI = INT(C0*(ELO + EMI) + C1)
9534	TSK = 2.0*ENP(9)*(ELO + 2.0*EMI + ENI)
9535	ASKT = TSK*BS
9536	NCR = 1
9537	GO TO 110
9538	C
9539	123 IF (NCR - 1) 124,124,129
9540	124 IF (RMAX - RI) 125,129,129
9541	125 RMAX = RI
9542	PSKCCR = PCCRI
9543	PSKSCR = PSCRI

```
CARD NO  ****                          CONTENTS                          ****
 4544            LCCR = M
 4545       C
 4546        129  CONTINUE
 4547       C
 4548       C             ***CHECK FOR LOOP STATUS AND LOOP IF NL=1 AND NCR=1***
 4549       C              **IF NCR = 0, CHECK DLEMI AND RMAX***
 4550       C
 4551       C               *SECOND LOOP REQD FOR RECALC OF LOAD DIST WITH NEW SKIN*
 4552            IF (1 - NCR) 140,130,132
 4553        130  IF (NL - 1) 131,131,140
 4554        131  NL = 2
 4555            NCR = 2
 4556            SKRMX = 0.0
 4557            GO TO 109
 4558       C
 4559       C              **IF RMAX = 1, OK.  IF NOT CHECK DLEMI FOR NON-ZERO NO.**
 4560       C              **IF DLEMI NOT ZERO, DECREASE M-PLIES BY 1 AND RECALC**
 4561        132  IF (RMAX - 1.0) 133,140,133
 4562        133  IF (DLEMI) 140,140,134
 4563        134  EMI = EMI - 1.0
 4564            DLEMI = DLEMI - 1.0
 4565            ENI = INT(CB*(ELO + EMI) + C3)
 4566            TSK = 2.0*ENP(9)*(ELO + 2.0*EMI + ENI)
 4567            ASKT = TSK*DS
 4568            GO TO 100
 4569       C
 4570       C             ***CHECK L-PLY APPLIED/ULT P/A STRESSES AND RATIOS***
 4571       C              **CALC MIN B/T REQD**
 4572        140  RSKPOA = 0.0
 4573            RSTPOA = 0.0
 4574            FSTR = 0.0
 4575            BKOTS = 0.0
 4576            BFOTS = 0.0
 4577            FSTRL = 0.0
 4578            ASKL = 2.0*ENP(9)*ELO*DS
 4579            ASTRL = ASTR/(STRL*ENP(8))
 4580       C
 4581       C              **SETUP DELTA NO OF M AND N PLIES**
 4582            DLEMI = EMI - EMO
 4583            DLENI = ENI - ENO
 4584            IF (DLENI) 1400,1401,1401
 4585        1400 DLENI = 0.0
 4586       C
 4587       C              **PRINT SUMMARY DATA ON APRTID(NSTAT) = 1**
 4588        1401 IF (APRTID(NSTAT)) 141,141,1402
 4589        1402 WRITE (6,1403)LCCR,SKRMX,ELO,EMI,ENI,TSK,ASKT,ASKL,ASTR,ASTRL,STRL
 4590           1,PSKCRL,PSTCRL,ESKCRL,PNXCRL,QSKCRL,PSKCCR,PSKSCR
 4591        1403  FORMAT (1H0,//2X,I2,2X,F8.4,3F7.1,6F9.4,/7X,2F11.1,E16.8,4F11.1)
 4592       C
 4593        141  DO 149 N=1,ILCASE
 4594            I = 1
 4595            IF (PSK(N)) 142,143,143
 4596        142  I = 2
 4597        143  SKAPL = PSK(N)/ASKL
 4598            STAPL = PSTR(N)/ASTR
 4599            SKALL = ENX(I,N)*0.50/ENP(9)
 4600            STALL = SKALL
 4601            RASKI = SKAPL/SKALL
 4602            RASTI = STAPL/STALL
 4603            IF (RSKPOA - RASKI) 144,145,145
 4604        144  RSKPOA = RASKI
 4605        145  IF (RSTPOA - RASTI) 148,147,147
 4606        148  RSTPOA = RASTI
 4607       C
 4608       C              **MAX COMP STRESS.  SAVE LOAD ID FOR MAX STRESS**
 4609       C              **CRITICAL B/T STRESS = F(MAX STR STRESS)**
 4610        147  IF (STAPL) 1475,1478,1470
 4611        1478 IF (FSTR - STAPL) 1471,1472,1472
 4612        1471 FSTR = STAPL
 4613       C
 4614       C              **B/T CHECK**
```

```
CARD NO  ****                          CONTENTS                          ****

 4615      1472 EOTA = EBOT(IN)/STAPL
 4616           BOTI = SQRT(DSTR(5*EOTA)
 4617           IF (BWOTS) 1474,1474,1473
 4618      1473 IF (BOTI - BWOTS) 1474,1474,1489
 4619      1474 BWOTS = BOTI
 4620           LSTRCR = N
 4621      1489 BFOTI = SQRT (DSTR(6*G(N)/STAPL )
 4622           IF ( BFOTS ) 1490,1490,1491
 4623      1491 IF ( BFOTI - BFOTS ) 1490,1490,1492
 4624      1490 BFOTS = BFOTI
 4625           GO TO 1479
 4626      C
 4627      C              **TEST FOR LND COVER.  SAVE MAX TENSION STRESS FOR LWR**
 4628      1475 IF (2 - ISKIN) 1476,1476,1479
 4629      1476 IF (STAPL - FSTRL) 1477,1477,1479
 4630      1477 FSTRL = STAPL
 4631      C
 4632      C              **PRINT LOAD SUMMARY DATA ON APRTID(NSTAT) = 1**
 4633      1479 IF (APRTID(NSTAT)) 149,149,148
 4634      148  WRITE (6,1480)N,RSKPOA,RASKT,PSKIN1,SKAPL,SKALL,RSTPOA,RASTI,PSTR(
 4635           IN),STAPL,STALL
 4636      1480 FORMAT (3X,I2,2X,2F8.4,3F11.1,2X,2F8.4,3F11.1)
 4637      C
 4638      149  CONTINUE
 4639      C
 4640      C
 4641      199  RETURN
 4642           END
 4643      C**************************************************  **************************
 4644      C
 4645      C        *****SUBROUTINE ACSTRG*****
 4646      C   ***STRINGER GEOMETRY/SECTION PROPERTIES - ADV. COMP. ANALYSIS***
 4647      C
 4648      C*****************************************************************************
 4649      C
 4650           SUBROUTINE ACSTRG(ID)
 4651      C
 4652      C            ****STRINGER GEOMETRY SUBROUTINE****
 4653      C             ***CALC AREA DISTRIBUTIONS BASED ON CRIPPLING B/T***
 4654      C              **TYPE OF STR= I, Z, T, HAT**
 4655      C              **STRINGER ID = NSTIFF.  1=I, 2=Z, 3=T, 4=HAT**
 4656      C
 4657      C             ***DISTRIBUTION ID = ID.  0=OK, 1=STR AREA TOO SMALL***
 4658      C
 4659           COMMON T(2000),D(2060),CD(2000),ND(100),TW(900),CT(2048)
 4660      C
 4661           DIMENSION TX(160),TXS(100),CNT(91),
 4662          2STFNM(5),STFNF(5),
 4663          3APRTID(12),
 4664          4ENP(9)
 4665      C
 4666           EQUIVALENCE (ENP(1),D(1155)),(TX(1),CD(1)),(TXS(1),CD(181)),
 4667          1(CNT(1),T(1541)),
 4668          2(SMMAX,CNT(7)),(DMMIN,CNT(40)),(BFMAX,CNT(41)),(BFMIN,CNT(42)),
 4669          3(STRLO,TX(50)),(ASTR,TX(55)),(STRL,TX(56)),(STRLT,TX(57)),
 4670          4(TSTR,TX(60)),(BW,TX(62)),(DF,TX(63)),(ISTR,TX(64)),(YBAR,TX(65)),
 4671          5(BWOTS,TX(76)),(BFOTS,TX(77)),(BOTA,TX(78)),(STFNT,TX (79)),
 4672          6(BWL,TXS(30)),(BWT,TXS(31)),(BWLT,TXS(32)),
 4673          7(BWLI,TXS(35)),(BWTI,TXS(36)),(BWLTI,TXS(37)),
 4674          8(STFNM(1),D(1348)),(STFNF(1),D(1353)),
 4675          9(NSTIFF,ND(33))
 4676          A,(BWI,TXS(38)),(BFI,TXS(39)),(BOTF,TXS(40))
 4677          B,(APRTID(1),T(1070)),(NSTAT,ND(55))
 4678          C,(DBOTEP,D(1444))
 4679      C
 4680      C
 4681           REAL ISTR
 4682      C
 4683      C            ***TYPE OF STRINGER TEST***
 4684           TREQD = 0.0
 4685           TREQD1= 0.0
```

CARD NO **** CONTENTS ****

```
      ILDEL = 3
  400 ID = 0.0
      BHL = STRL
      BHT = TSTR
      BHLT = STRLT
      BOTA = BHMIN/BHT
      IF (NSTIFF - 1) 410,410,500
C
C             ***INTEGRAL I STRINGER***
  410 BHOTS = BFOTS
C
  411 IF (BOTA - BHOTS) 412,420,417
  412 IF (BHLT - BHMAX) 413,420,420
   413 BHLI = BHL - 3.0
 4130 IF (STRLG - BHLI) 414,414,4200
  414 BHTI = ENP(9)*BHLI
      BHLTI = ASTR/BHTI
      IF (BHLTI - BHMAX) 415,415,420
  415 IF (BHLTI/BHTI - BHOTS) 416,4.5,420
  416 BHL = BHLI
      BHT = BHTI
      BHLT = BHLTI
      BOTA = BHLT/BHT
      GO TO 411
C
C              **B/T AVAILABLE TOO LARGE.  INCREASE L-PLIES IF POSSIBLE*
C              **CHECK B/T TOL**
  417 IF (BHOTS + DBOTEP - BOTA) 418,420,420
  418 BHL = BHL + 1.0
      BHT = ENP(9)*BHL
      BHLT = ASTR/BHT
      IF (BHMIN - BHLT) 419,419,598
  419 BOTA = BHLT/BHT
      IF (BHOTS-BOTA) 417,420,420
C
C     CHECK PLIES WHICH WERE SKIPPED DURING SEARCH FOR MAX. INERTIA
C
 4200 IF ( ILDEL .EQ. 1 )  GO TO 420
      ILDEL = ILDEL - 1
      BHLI = BHLI + 1.0
      GO TO 4130
C
C
C             ***I-STR SECTION PROPERTIE.
  420 BH = BHLT
      BF = 0.0
      ISTR = ASTR*BH/12.0*BH
      YBAR = BH/2.0
      GO TO 599
C
C
C             ***INTEGRAL Z, T, OR HAT STIFFENERS.  CHECK FOR HAT***
  500 BH = BHMIN
      BF = BFMIN
      BOTF = BFMIN/BHT
      IF (4 - NSTIFF) 501,501,510
  501 BFOTS = BHOTS
C
C
C             ***B/T AVAILABLE TOO LARGE.  INCREASE L-PLIES IF POSSIBLE*
C              **CHECK B/T TOL**
  510 IF (BHOTS + DBOTEP - BOTA) 5100,518,515
 5100 BHL = BHL + 1.0
      BHT = ENP(9)*BHL
      BH = BHOTS*BHT
      BF = BFOTS*BHT
      BHA = BHT*(STFNH(NSTIFF)*BH + STFNF(NSTIFF)*BF + STFNT*BHT)
      IF (BHA - ASTR) 511,512,598
  511 BHLT = ASTR/BHT
        TRCOO = (BHLT -STFNT*BHT) / (STFNH(NSTIFF)*BHOTS+STFNF(NSTIFF
     1*BFOTS)
```

CARD NO **** CONTENTS ****

```
      IF (TREQD .GT. BWT)  GO TO 5100
      BW = BWOTS * BWT
      IF ( BW .GT. BWMAX )  BW=BWMAX
      BF =(BWLT - STFNT*BWT - STFNH(NSTIFF)*BW)/STFNF(NSTIFF)
      IF ( BF+BW-BWMAX-BFMAX ) 1000,1000,1005
 1000 IF ( BF .GT. BFMAX ) BF = BFMAX
      BW =(BWLT - STFNT*BWT - STFNF(NSTIFF)*BF)/STFNH(NSTIFF)
      GO TO 512
 1005 BF = BFMAX
      BW = BWMAX
      B = STFNF(NSTIFF)*BF +  STFNH(NSTIFF)*BW
      BWT = (SQRT (B**2 + 4.*ASTR*STFNT) - B) / (2.*STFNT)
      BWL = INT(BWT/ENP(9))
      BWT = BWL*ENP(9)
      IF ( STRLO .GT. BWL )  GO TO 598
  512 IF (BWMIN - BW) 513,513,598
  513 BOTA = BW/BWT
      IF (BFMIN-BF) 514,514,598
C
C               **BW OK.  CHECK BF**
  514 IF (BOTA - BWOTS - DBOTEP) 515,516,5100
  515 BOTF = BF/BWT
      IF (BOTF - BFOTS - DBOTEP) 520,580,5100
  516 BOTF = BF/BWT
      IF (BOTF - BFOTS - DBOTEP) 580,580,5100
C
C               **B/T AVAILABLE AT BMIN OK**
C               **CHECK L-PLY(I-1) FOR LARGER BW/BF AT CONSTANT AREA***
  520 BWLI = BWL - 3.0
 5200 IF ( STRLO - BWLI ) 521,521,5800
  521 BWTI = ENP(9)*BWLI
      BWLTI = ASTR/BWTI
      TREQDI= (BWLTI - STFNT*BWTI ) / (STFNH(NSTIFF)*BWOTS +
     (STFNF(NSTIFF)*BFOTS)
      IF ( TREQDI.GT. BWTI )  GO TO 5800
      BWI = BWOTS*BWTI
      IF ( BWI .LT. BWMIN ) GO TO 5800
      IF ( BWI .GE. BWMAX )  BWI = BWMAX
      BFI =(BWLTI - STFNT*BWTI - STFNH(NSTIFF)*BWI)/STFNF(NSTIFF)
      IF ( BFI .LT. BFMIN )  BFI = BFMIN
      BWI =(BWLTI - STFNT*BWTI - STFNF(NSTIFF)*BFI)/STFNH(NSTIFF)
      IF ( BWI .LT. BWMIN )  GO TO 5800
C
C               **CHECK IF BWI,BFI WITHIN MAX LIMITS**
      IF (BWMAX - BWI) 522,522,526
  522 BWI = BWMAX
      BFI =(BWLTI - STFNT*BWTI - STFNH(NSTIFF)*BWI)/STFNF(NSTIFF)
      IF (BFI - BFMAX) 527,523,5800
  523 IF (BWI/BWTI - BWOTS - DBOTEP) 524,524,5800
  524 IF (BFI/BWTI - BFOTS - DBOTEP) 525,525,5800
C
C               **BWMAX AND BFI.  MOVE TO FINAL LOC**
  525 BWL = BWLI
      BWT = BWTI
      BWLT = BWLTI
      BW = BWI
      BF = BFI
      BOTA = BW/BWT
      BOTF = BF/BWT
      GO TO 580
C
C               **BW LESS THAN MAX.  CHECK BF**
  526 IF (BFI - BFMAX) 527,527,530
  527 IF (BWI/BWTI - BWOTS - DBOTEP) 528,524,5800
  528 IF (BFI/BWTI - BFOTS - DBOTEP) 529,525,5800
  529 BWL = BWLI
      BWT = BWTI
      BWLT = BWLTI
      BW = BWI
      BF = BFI
      BOTA = BW/BWT
```

CARD NO **** CONTENTS ****

```
      BOTF = BF/BHT
      GO TO 520
C
C             **BF AT BF MAX.  CHECK STATUS OF BH**
  530 BFI = BFMAX
      BHI =(BHLTI - STFNT*BHTI - STFNF(NSTIFF)*BFI)/STFNH(NSTIFF)
      IF (BHI -BHMAX) 527,523,5800
C
C     CHECK PLIES WHICH WERE SKIPPED DURING SEARCH FOR MAX. INERT *
C
 5800 IF ( ILDEL .EQ. 1 ) GO TO 580
      ILDEL = ILDEL - 1
      BHLI = BHLI + 1.0
      GO TO 5200
C
C
C             ***STRINGER SECTION PROPERTIES--COMMON FOR Z, T, HAT***
  580 AW = BHT*BH
      AF = BHT*(BF + STFNT*BHT)
      YBAR = (STFNH(NSTIFF)*AW/2.0*BH + STFNF(NSTIFF)*AF*(BHT/2.0 + BH))
     1/ASTR
C
      ISTR = STFNH(NSTIFF)*AW*(BH/12.0*BH + (BH/2.0 - YBAR)**2) + STFNF(
     INSTIFF)*AF*(BHT/12.0*BHT + (BH + BHT/2.0 - YBAR)**2)
      GO TO 599
C
C
C             ***STR AREA TOO SMALL.  SET EXIT ID=1***
  598 ID = 1
C
C
C             ***PRINT ON APRTID(NSTAT) = 1***
  599 IF (APRTID(NSTAT)) 5999,5999,5990
 5990 WRITE (6,5991)NSTAT,NSTIFF,ID,ASTR,STRL,STRLT,ISTR,BHOTS,BFOTS
 5991 FORMAT (24H0   ***ACSTRO SUBR---STA,I3,10H   NSTIFF=,I2,6H   ID=,I
     1 2,8H   ASTR=F8.5,4H ***,//6X,5F18.5)
 5992 FORMAT (8X,4F12.5,/8X,6F12.5,/8X,6F12.5,I4)
C
      WRITE (6,5992)BH,BF,ISTR,YBAR,BHL,BHT,BHLT,BHLI,BHTI,BHLTI,BHI,BFI
     1,BOTA,BOTF,TREQD ,TREQDI,ILDEL
C
C
 5999 RETURN
      END
C*****************************************************************************
C
C        *****SUBROUTINE WEIGH2*****
C   ***SECTION WT PER INCH FOR ADV. COMP. W/RIB TORQUE-BOX***
C
C*****************************************************************************
C
      SUBROUTINE WEIGH2 (WEI,NSTAT)                                     WEI02010
C
C  *   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *
C
C SUBROUTINE TO CALCULATE THE WEIGHT OF A RIB-STRINGER TYPE WING BOX
C
C  *   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *
C
C                                                                       WEI02020
C                                                                       WEI02030
      COMMON T(9180)                                                    WEI02040
C                                                                       WEI02050
      DIMENSION D(2080),CT(2040),ND(100),                               WEI02060
     1EMP(9),EMW(8),EMC(3),EL(15),                                      WEI02061
     2W(35),                                                            WEI02062
     3SLCFS(5),SWBCP(2),SWOS(2),SWBCF(2),                               WEI02063
     4APRTID(12).                                                       WEI02064
     6SPN(33),
     8WI(2,11),STRING(2,10,11),CNT(30)                                  WEI02069
C                                                                       WEI02070
```

```
CARD NO  ****                          CONTENTS                          ****
 4899        EQUIVALENCE (D(1),T(206)),(CT(1),T(712)),(ND(1),T(612)),
 4900       1(ENP(1),D(135)),(ENH(1),D(136)),(ENC(1),CT(204)),
 4901       2(EL(1),T(1300)),(CNT(1),T(154)),
 4902       3(CN,CNT(1)),(HS,CNT(24)),(HF,CNT(25)),(HR,CNT(26)),
 4903       4(SFCODE,ND(45)),(SRCODE,ND(46)),(SPCODE,ND(43)),
 4904       5(CFRIB,D(400)),(SWBCP(1),D(427)),(DDHHO,D(146)),
 4905       6(TCPNL1,CNT(31)),(TCPNLF,CNT(32)),(TCPNLR,CNT(33)),
 4906       7(SLCFS(1),D(147)),(SWBCP(1),D(423)),(SWMS(1),D(410)),
 4907       8(DRMIR,D(24)),(PFFSCV,CT(204)),(PFFSSP,CT(204)),
 4908       9(W(1),1),CT(198)),(STRING(1,1,1),T(1676))
 4909       A,(AFRTID(1),T(1070))
 4910       B,(SPN(1),T(1265))
 4911      C
 4912      C
 4913        INTEGER SPCODE,SFCODE,SRCODE
 4914      C
 4915        DO 100 I=1,35
 4916        W(I) = 0.0
 4917  100  CONTINUE
 4918      C
 4919      C            ***EFFECTIVE WIDTH***
 4920        W(18) = W(1,NSTAT) + CN
 4921      C
 4922      C            ***THICKNESSES**
 4923        DO 101 I=1,5
 4924        IW = I*3 - 2
 4925        W(I) = (EL(IW) + 2.0*EL(IW+1) + EL(IW+2))*ENP(9)*D(2)
 4926  101  CONTINUE
 4927      C
 4928      C            ***CAPS FOR FS AND RS--FLT-BAR COVERS)***
 4929        W(19) = W(1) + STRING(1,9,NSTAT)/STRING(1,1,NSTAT)
 4930        W(20) = W(2) + STRING(2,9,NSTAT)/STRING(2,1,NSTAT)
 4931        DO 106 I=1,2
 4932        W(25) = W(I+18)*SLCFS(4)
 4933        IF (W(25) - SLCFS(3)) 104,104,105
 4934  104  W(25) = SLCFS(3)
 4935  105  W(I+10) = W(25)*SWBCP(1) + W(3)*SWBCP(1)/D(2)
 4936        W(I+12) = W(25)*SWBCP(2) + W(5)*SWBCP(2)/D(2)
 4937  106  CONTINUE
 4938      C
 4939      C             **FILLER THICKNESS AT RIB=2*L-PLY THICKNESS**
 4940      C              *FASTENER LENGTH = T(SKIN) + T(FILLER) + T(RIB WEB) +
 4941      C              *     LEFF(HEAD,GRIP,RETAINER)+0.625 IN.)*
 4942        W(26) = 4.0*ENP(8)*EL(1)
 4943        W(27) = 4.0*ENP(9)*EL(4)
 4944        W(32) = W(1) + W(26)/2.0 + W(4) + 0.625
 4945        W(33) = W(2) + W(27)/2.0 + W(4) + 0.625
 4946      C
 4947      C            ***CONVERT THICKNESSES TO WEIGHT***
 4948        DO 107 I=1,5
 4949        W(I) = W(I)*ENP(8)
 4950        W(I+10) = W(I+10)*ENP(8)
 4951  107  CONTINUE
 4952      C
 4953      C
 4954      C             *PROCESS COVERS*
 4955        W(1) = W(1)*W(18)
 4956        W(2) = W(2)*W(18)
 4957        W(6) = PFFSCV*W(18)
 4958        W(7) = PFFSCV*W(18)
 4959      C
 4960      C             **STRINGERS**
 4961        W(15) = STRING(1,9,NSTAT)*SPN(NSTAT)*ENP(8)
 4962        W(17) = STRING(2,9,NSTAT)*SPN(NSTAT)*ENP(8)
 4963        W(21) = PFFSSP*D(2)*STRING(1,9,NSTAT)/STRING(1,8,NSTAT)*SPN(NSTAT)
 4964        W(22) = PFFSSP*D(2)*STRING(2,9,NSTAT)/STRING(2,8,NSTAT)*SPN(NSTAT)
 4965      C
 4966      C            ***INTERM. RIBS.  SETUP RIB COL LENGTH***
 4967      C              *TEST FOR CORRUG. OR HC/PNL**
 4968        W(25) = STRING(1,2,NSTAT)
 4969      C
```

CARD NO **** CONTENTS ****

```
      C            **FILLER AND ATT WTS**
  109 DO 1090 I=1,2
      W(I+27) = W(I+25)*EMP(8)/W(25)*WI(I,NSTAT)
      W(I+29) = 0.001473*W(I+31)/W(25)*WI(I,NSTAT)
 1090 CONTINUE
      C
      W(34) = 2.0*W(4)*WI(I,NSTAT)
      W(25) = WS*WI(I,NSTAT)/W(25)*CFRIB
      W(4) = W(4)*W(25)
      W(9) = PFFSSP*W(25)
      IF (SPCODE - 1) 111,111,110
  110 W(9) = W(25)/CFRIB*(TCPNL1*ENC(1) + DBRHO) + W(9)/CFRIB
      W(4) = W(4)/CFRIB
  111 W(4) = W(4) + W(34)
      C
      C            *FRONT SPAR*
      W(8) = WF*PFFSSP*SWBCF(1)
      W(3) = W(3)*WF*SWBCF(1)
      IF (SFCODE - 1) 113,113,112
  112 W(8) = WF*(TCPNLF*ENC(1) + DBPHO) + W(8)/SWBCF(1)
      W(3) = W(3)/SWBCF(1)
      C
      C            *REAR SPAR*
  113 W(10) = WR*PFFSSP*SWBCF(2)
      W(5) = W(5)*WR*SWBCF(2)
      IF (SRCODE - 1) 115,115,114
  114 W(8) = WF*(TCPNLR*ENC(1) + DBRHO) + W(10)/SWBCF(2)
      W(5) = W(5)/SWBCF(2)
      C
      C            ***W(MISC) FOR I-RIBS, F/S AND R/S***
  115 W(16) = (DKMIR - D(1))*W(4) + (SWKMS(1) - D(1))*(W(3) + W(11) + W(
     1121) + (SWKMS(2) - D(1))*(W(5) + W(13) + W(14))
      C
      C            ***SUM***
  120 WEI = W(21) + W(22) + W(28) + W(29) + W(30) + W(31)
      DO 121 I=1,17
      WEI = WEI + W(I)
  121 CONTINUE
      C
      C
      C
      C            ***PRINT SECTION DATA ON APRTID(NSTAT) = 1***
  190 IF (APRTID(NSTAT)) 199,199,194
  194 WRITE (6,195)NSTAT,STRING(1,10,NSTAT),WEI
      C
  195 FORMAT (24H0  ***WEIGH2 SUBR -- STA,I3,8H  N/STR=,F7.1,8H  WT/IN=,
     1F8.4,4H*** ,/8H0   W )
  196 FORMAT (3X,I2,2X,5F12.4)
  197 FORMAT (12H0  EL(1-15)=,3F6.1,2X,3F6.1,2X,3F5.1,2X,3F5.1,2X,3F5.1)
      C
      DO 198 N=1,35,5
      K = N + 4
      WRITE (6,196)N,(W(I),I=N,K,1)
  198 CONTINUE
      WRITE (6,197)(EL(I),I=1,15)
      C
  199 RETURN
      END                                                              WB002100
      C*********************************************************************
      C
      C      *****SUBROUTINE ASTIFF*****
      C   ***TORQUE-BOX STIFFNESS EVALUATION - ADV. COMP. ANALYSIS***
      C
      C*********************************************************************
      C
      SUBROUTINE ASTIFF                                                ASTF0010
      C                                                                ASTF0020
      C         ***SUBR TO EVALUATE EI AND GJ FOR COMPOSITE DESIGN ***   ASTF0030
      C           *FOR N/SPAR PLATE/HC PNL AND N/RIB STRINGER*          ASTF0040
      C
      C         ***TSF(11) = ACEIGJ SUBR CONTROL ID***
```

```
CARD NO.  ****                          CONTENTS                          ****
 5041     C            **0=CALC SLCT GEOM FOR FIRST ST OF VF PASSES**
 5042     C            **1=SKIP SLCT GEOM CALC**
 5043     C
 5044     C
 5045     C                                                                ASTF0050
 5046          COMMON T(2060),D(20060),CD(20000),ND(1000),TH(900),C(12040)  ASTF0060
 5047     C                                                                ASTF0070
 5048          DIMENSION ENP(9),EL(15),IEL(15,11),
 5049         1TA(40),TSF(60),SPB(33),SPN(33),
 5050         2TBH(11),TBD(11),TBRS(11),TBRS(11),
 5051         3SLCFS(5),SWBCP(2),
 5052         8IHI(4),
 5053         9STRING(2,10,11),CNT(30)
 5054     C                                                                ASTF0090
 5055          DIMENSION GJSTD(11),EISTD(11),GJCD(11),EICD(11),
 5056         1GSTD(11),ESTD(11),GCMD(11),ECMD(11),
 5057         2GJSFO(11),EISFO(11),GJCFO(11),EICFO(11),
 5058         3GSFO(11),ESFO(11),GCFO(11),ECFO(11),
 5059         4GJSFL(11),EISFL(11),GJCFL(11),EICFL(11),
 5060         5GSFL(11),ESFL(11),GCFL(11),ECFL(11),
 5061         6GJVFD(11),EIVFD(11),GVFD(11),EVFD(11),
 5062         7GJVFS(11),EIVFS(11),GVFS(11),EVFS(11),
 5063         8DLRGJM(44),GJROD(11),TEIGJ(4),ENOC(5,4)
 5064     C                                                                ASTF0110
 5065          EQUIVALENCE (ENP(1),D(1155)),(IEL(1),T(1300)),(IEL(1,1),TH(1)),
 5066         1(TA(1),CD(40)),(TSF(1),CD(44)),
 5067         2(SPB(1),T(1232)),(SPN(1),T(1265)),
 5068         3(TBH(1),T(542)),(TBD(1),T(530)),(TBFS(1),T(153)),(TBRS(1),T(165)),
 5069         4(SLCFS(1),D(1470)),(SWBCP(1),D(423)),
 5070         5(CNT(1),T(154)),(C7,CNT(22)),
 5071         6(IHI,IHI(1)),(IH2,IHI(2)),(IH3,IHI(3)),(IH4,IHI(4)),
 5072         7(TCPNLU,CNT(29)),(TCPNLL,CNT(30)),(TCPNLF,CNT(32)),
 5073         8(TCPNLR,CNT(33)),
 5074         9(ACID,D(430)),(STRING(1,1,1),T(1676))
 5075         A,(IPB,ND(2))
 5076     C                                                                ASTF0130
 5077          EQUIVALENCE (GJSTD(1),CD(1)),(EISTD(1),CD(12)),(GSTD(1),CD(23)),
 5078         1(ESTD(1),CD(34)),(GJCD(1),CD(45)),(EICD(1),CD(56)),
 5079         2(GCMD(1),CD(67)),(ECMD(1),CD(78)),
 5080         3(GJVFD(1),CD(89)),(EIVFD(1),CD(100)),(GVFD(1),CD(111)),
 5081         4(EVFD(1),CD(122)),(GJSFO(1),CD(133)),(EISFO(1),CD(144)),
 5082         5(GSFO(1),CD(155)),(ESFO(1),CD(166)),(GJCFO(1),CD(177)),
 5083         6(EICFO(1),CD(188)),(GCFO(1),CD(199)),(ECFO(1),CD(210 ),
 5084         7(GJSFL(1),CD(221)),(EISFL(1),CD(232)),(GSFL(1),CD(2 3)),
 5085         8(ESFL(1),CD(254)),(GJCFL(1),CD(265)),(EICFL(1),CD(276)),
 5086         9(GCFL(1),CD(287)),(ECFL(1),CD(298)),(DLRGJM(1),CD(309))
 5087         A,(GJROD(1),T(668))
 5088         B,(TEIGJ(1),TH(783)),(ENOC(1,1),TH(787))
 5089         C,(GJVFS(1),CD(353)),(EIVFS(1) CD(364)),(VFID,D(25))
 5090         D,(GVFS(1),CD(375)),(EVFS(1),CD(386))
 5091     C                                                                ASTF0150
 5092     C                                                                ASTF0160
 5093          REAL ICL                                                    ASTF0170
 5094     C                                                                ASTF0180
 5095     C
 5096     C            ***EVALUATE STIFFNESS OF DESIGN AT 11 STATIONS***
 5097     C              *CALC AS REQD, ST(EI/GJ/E/G) FOR SELECTED REF TEMP*
 5098     C              *     AND FOR OUTPUT FOR FLUTTER OPT AND FLEX LOADS*
 5099     C              *SAVE CALC DATA IN BOTH ST AND COMPOSITE ARRAY LOC*
 5100     C             **CLEAR CD(1-400)--STIFFNESS DATA REGION**
 5101      790  DO 791 I=1,400
 5102           CD(I) = 0.0
 5103      791  CONTINUE
 5104     C
 5105      800  DO 839 NSTAT=1,11
 5106     C
 5107     C            ***CLEAR TA AND TSF ARRAYS***
 5108           DO 8000 I=1,40
 5109           TA(I) = 0.0
 5110      8000 CONTINUE
 5111           DO 8001 I=1,60
```

CARD NO **** CONTENTS ****

```
5112          TSF(1) = 0.0
5113        8001 CONTINUE
5114           C
5115           C            ***MOVE LAMINATE DATA TO EL ARRAY AND CALC BASIC ST(I)***
5116          DO 801 I=1,15
5117          EL(I) = IEL(I,NSTAT)
5118         801  CONTINUE
5119           C
5120          DO 8012 I=1,4
5121          N = ND(3)*I - ND(2)
5122          IF (I - ND(4)) 8011,8010,8011
5123        8010 N = I*ND(3) + ND(1)
5124        8011 TSF(I+17) = ENP(9)*D(2)*(EL(N) + D(2)*EL(N+1) + EL(N+2))
5125        8012 CONTINUE
5126           C
5127           C             **I(CORE) FOR HC/PNL.  FOR PLATES AND STR, *0.0**
5128          TSF(22) = TCPNLU
5129          TSF(23) = TCPNLL
5130          TSF(24) = TCPNLF
5131          TSF(25) = TCPNLR
5132           C
5133          TSF(26) = (TSF(18) + TSF(22))/D(2)
5134          TSF(27) = (TSF(19) + TSF(23))/D(2)
5135          TSF(20) = (TSF(20) + TSF(21) + TSF(24) + TSF(25))/D(2)
5136           C
5137          TSF(12) = TBO(NSTAT) - TSF(26) - TSF(27)
5138          TSF(16) = TBFS(NSTAT) - TSF(26) - TSF(27)
5139          TSF(17) = TBRS(NSTAT) - TSF(26) - TSF(27
5140          TSF(13) = TBH(NSTAT) - TSF(28)
5141          TSF(14) = TSF(13)
5142          TSF(15) = TSF(13)
5143           C
5144           C            ***I-SPAR CAP OR STRINGER AREA--TEST CONST***
5145           C              *ID = 2 FOR H/SPAR, 1 FOR H/RIB*
5146          TSF(10) = SPN(NSTAT) - D(2)
5147          IF (ACID - D(1)) 802,802,803
5148           C
5149           C             **H/RIB--SETUP STRINGER DATA***
5150         802  TSF(9) = D(1)
5151          TSF(3) = STRING(1,9,NSTAT)/STRING(1,1,NSTAT)
5152          TSF(4) = STRING(2,9,NSTAT)/STRING(1,1,NSTAT)
5153          TSF(5) = STRING(1,4,NSTAT)/STRING(1,1,NSTAT)
5154          TSF(6) = STRING(2,4,NSTAT)/STRING(1,1,NSTAT)
5155          TSF(7) = STRING(1,5,NSTAT)/STRING(1,1,NSTAT)
5156          TSF(8) = STRING(2,5,NSTAT)/STRING(1,1,NSTAT)
5157          GO TO 804
5158           C
5159           C             **H/SPAR--SETUP I-SPAR CAPS**
5160           C              *C7 = 0.0 FOR FDH*
5161         803  TSF(9) = TSF(10)/(TSF(10) + D(1))
5162          TSF(3) = C7*TSF(9)*TSF(18)/SPB(NSTAT)
5163          TSF(4) = TSF(3)
5164          TSF(5) = TSF(3)/D(12)*TSF(3)*TSF(3)
5165          TSF(6) = TSF(5)
5166          TSF(7) = TSF(3)/D(2)
5167          TSF(8) = TSF(7)
5168           C
5169           C              *T-BAR COVERS*
5170         804  TSF(1) = TSF(18) + TSF(3)
5171          TSF(2) = TSF(19) + TSF(4)
5172           C
5173           C            ***FS/RS COVER OVERHANG AND CAP AREAS***
5174          DO 807 I=1,2
5175          TSF(I+34) = SLOPS(I)*TSF(I)
5176          TSF(I+36) = SLOPS(2)*TSF(3)
5177          TSF(I+40) = TSF(I+34)/D(12)*TSF(I)*TSF(I)
5178          TSF(I+42) = TSF(I+36)/D(12)*TSF(I)*TSF(I)
5179           C
5180           C
5181           C              *CAP Y-BAR = 2/3*AREA/L(CAP)*
5182          TSF(I+30) = SLOPS(4)*TSF(I)
```

```
CARD NO   ****                      CONTENTS                       ****
          IF (TSF(I+30) - SLCFS(3)) 805,805,806
      805 TSF(I+30) = SLCFS(3)
      806 TSF(I+20) = TSF(I+30)*SHBCP(1) + TSF(20)*SHBCP(1)/D(2)
          TSF(I+30) = TSF(I+30)*SHBCP(2) + TSF(21)*SHBCP(2)/D(2)
C
          TSF(34) = TSF(I+28)/SHBCP(1)
          TSF(I+44) = TSF(I+28)/D(12)*TSF(34)*TSF(34) + TSF(I+28)/36.0
          TSF(I+32) = 0.667*TSF(34)
          TSF(40) = TSF(I+30)/SHBCP(2)
          TSF(I+46) = TSF(I+30)/D(12)*TSF(40)*TSF(40) + TSF(I+30)/36.0
          TSF(I+38) = 0.667*TSF(40)
      807 CONTINUE
C
C
C                ***REF ST STIFFNESS--IDT=1***
      809 IDT = 1
          CALL ACEIGJ(NSTAT,IDT,EISTD(NSTAT),GJSTD(NSTAT),ESTD(NSTAT),GSTD(N
         1STAT))
C
          EICD(NSTAT) = EISTD(NSTAT)
          GJCD(NSTAT) = GJSTD(NSTAT)
          ECMD(NSTAT) = ESTD(NSTAT)
          GCMD(NSTAT) = GSTD(NSTAT)
C
C                **SET ACEIGJ CONTROL ID TSF(11) TO 1.0 FOR GEOM CALC SKIP
          TSF(11) = D(1)
C
C                **TEST FOR REQD DATA FOR FLUTTER OPT**
          IF (TEIGJ(3)) 820,820,810
      810 IDT = 3
          CALL ACEIGJ(NSTAT,IDT,EISFO(NSTAT),GJSFO(NSTAT),ESFO(NSTAT),GSFO(N
         1STAT))
C
          EICFO(NSTAT) = EISFO(NSTAT)
          GJCFO(NSTAT) = GJSFO(NSTAT)
          ECFO(NSTAT) = ESFO(NSTAT)
          GCFO(NSTAT) = GSFO(NSTAT)
C
C                **TEST FOR REQD DATA FOR FLEX LOADS**
C                **SET ACEIGJ CONTROL ID TSF(11) TO 1.0 FOR GEOM CALC SKIP
      820 IF (TEIGJ(4)) 830,830,821
      821 IDT = 4
          TSF(11) = D(1)
          CALL ACEIGJ(NSTAT,IDT,EISFL(NSTAT),GJSFL(NSTAT),ESFL(NSTAT),GSFL(N
         1STAT))
C
          EICFL(NSTAT) = EISFL(NSTAT)
          GJCFL(NSTAT) = GJSFL(NSTAT)
          ECFL(NSTAT) = ESFL(NSTAT)
          GCFL(NSTAT) = GSFL(NSTAT)
C
C
C                ***TEST FOR FLUTTER GJ REQMT FOR CALC***
      830 DLRGJM(NSTAT) = 0.0
          DLRGJM(NSTAT+11) = 0.0
          DLRGJM(NSTAT+22) = 0.0
          DLRGJM(NSTAT+33) = 0.0
          IF (VFID) 831,839,831
      831 IDT = 2
          CALL ACEIGJ(NSTAT,IDT,EIVFS(NSTAT),GJVFS(NSTAT),EVFS(NSTAT),GVFS(N
         1STAT))
          EIVFD(NSTAT) = EIVFS(NSTAT)
          GJVFD(NSTAT) = GJVFS(NSTAT)
          EVFD(NSTAT) = EVFS(NSTAT)
          GVFD(NSTAT) = GVFS(NSTAT)
C
C                ***TEST BASIC ST GJ WITH REQD GJ***
          IF (GJVFD(NSTAT) - GJROD(NSTAT)) 832,839,839
C
C                **SIZE TO REQD FLUTTER GJ--INCREASE J(STRUCT) BY STEPS***
C                **SETUP ID FOR ORDER OF INCREASE FOR WEBS**
```

```
CARD NO  ****                          CONTENTS                          ****
 5254    C              *SELECTION CRITERIA = THINNEST TO THICKEST WEB*
 5255    C              *ASSUMED INITIAL ORDER = FS, RS, LC, UC*
 5256    C
 5257    C              **INIT(1-4)=(IN1, IN2, IN3, IN4 = ORDER ICS*
 5258    C              *(IN1,IN2,IN3,IN4) WILL CONTAIN 1,2,3,4 TO DENOTE WHICH
 5259    C              *     WEB IS TO BE USED IN THE SEQUENTIAL STEPS*
 5260    C
 5261     832  IN1 = 3
 5262          IN2 = 4
 5263          IN3 = 2
 5264          IN4 = 1
 5265    C
 5266    C              **TSF(53,54,55,56) TO CONTAIN INITIAL TUC,LC,FS,RS)**
 5267          TSF(53) = (EL(1) + D(2)*EL(2) + EL(3))*D(2)
 5268          TSF(54) = (EL(4) + D(2)*EL(5) + EL(6))*D(2)
 5269          TSF(55) = (EL(7) + D(2)*EL(8) + EL(9))*D(2)
  270          TSF(56) = (EL(13) + D(2)*EL(14) + EL(15))*D(2)
 5271    C
 5272    C             ***SELECT WEBS***
 5273          IF (TSF(IN2+52) - TSF(IN1+52)) 8323,8324,8324
 5274     8323 IX = IN1
 5275          IN1 = IN2
 5276          IN2 = IX
 5277    C
 5278    C              **ORDER NOW = 1,2,3,4 OR 2,1,3,4**
 5279     8324 IF (TSF(IN3+52) - TSF(IN1+52)) 8325,8325,8326
 5280     8325 IX = IN1
 5281          IN1 = IN3
 5282          IN3 = IX
 5283          GO TO 8328
 5284     8326 IF (TSF(IN3+52) - TSF(IN2+52)) 8327,8327,8328
 5285     8327 IX = IN2
 5286          IN2 = IN3
 5287          IN3 = IX
 5288    C
 5289    C              **ORDER NOW =  A. (3,1,2,4) OR (3,2,1,4) OR
 5290    C                *    B. (1,2,3,4),(1,3,2,4) OR (2,1,3,4),(2,3,1,4)*
 5291     8328 IF (TSF(IN4+52) - TSF(IN1+52)) 8329,8329,8330
 5292     8329 IX = IN1
 5293          IN1 = IN4
 5294          IN4 = IX
 5295          GO TO 8334
 5296    C
 5297     8330 IF (TSF(IN4+52) - TSF(IN2+52)) 8331,8331,8332
 5298     8331 IX = IN2
 5299          IN2 = IN4
 5300          IN4 = IX
 5301          GO TO 8334
 5302     8332 IF (TSF(IN4+52) - TSF(IN3+52)) 8333,8333,8334
 5303     8333 IX = IN3
 5304          IN3 = IN4
 5305          IN4 = IX
 5306    C
 5307    C             ***INITIALIZE STARTING T(1,2,3,4)***
 5308    C              **SET ACEIGJ SUBR CONTROL ID TSF(11) TO 0.0**
 5309     8334 TSF(11) = 0.0
 5310          TSF(57) = TSF(IN1+52)
 5311          TSF(58) = TSF(IN2+52)
 5312          TSF(59) = TSF(IN3+52)
 5313          TSF(60) = TSF(IN4+52)
 5314          TSF(53) = 0.0
 5315          TSF(54) = 0.0
 5316          TSF(55) = 0.0
 5317          TSF(56) = 0.0
 5318    C
 5319    C
 5320    C             ***SETUP DELTA MU,L,F,P  AND DELTA T(U,L,F,R)***
 5321     834  DO 8344 I=1,4
 5322          N = IN1(I)
 5323          NDL = N*ND(3) - ND(2)
 5324          IF (ND(4) - N) 8340,8340,8341
```

CARD NO **** CONTENTS ****

```
 8340 NEL = N(O(3) + NO(1)
 8341 IF (NO(1) - 1) 8342,8343,8343
 8342 IF (TSF(I+56) - TSF(I+55)) 8343,8344,8344
 8343 TSF(I+56) = TSF(I+56) + D(4)
      TSF(N+48) = TSF(N+48) + D(1)
      TSF(N+52) = TSF(N+52) + D(4)*CNP(9)
      EL(NEL+1) = EL(NEL+1) + D(1)
 8344 CONTINUE
C
C
C             ***CALC EI, GJ, E, G FOR T(ST) + DELTA(M)***
 8345 CALL ACEIGJ(NSTAT,IDT,EIMFD(NSTAT),GJMFD(NSTAT),EMFD(NSTAT),GMFD(N
     1STAT))
C
C              **TEST CURRENT VALUE OF GJ WITH REQD GJ**
 8346 IF (GJR2D(NSTAT) - GJMFD(NSTAT)) 8349,8349,834
C
C
C              **SAVE TOTAL DELTA M LAYERS**
 8349 DLRSUM(NSTAT) = TSF(49)
      DLRSUM(NSTAT+11) = TSF(50)
      DLRSUM(NSTAT+22) = TSF(51)
      DLRSUM(NSTAT+33) = TSF(52)
C
C             ***CALC COMPOSITE EI, GJ, E, G AT BASE TEMP***
C              **SET ACEIGJ CONTROL ID TSF(11) TO 1.0 FOR GEOM CALC SKIP
      TSF(11) = D(1)
      IDT = 1
      CALL ACEIGJ(NSTAT,IDT,EICD(NSTAT),GJCD(NSTAT),ECMD(NSTAT),GCMD(NST
     1AT))
C
C              **CALC COMPOSITE EI, GJ, E, G FOR FL/OPT, FL/LOD AS REQD*
      IF (TEIGJ(3)) 836,836,835
 835  IDT = 3
      CALL ACEIGJ(NSTAT,IDT,EICFO(NSTAT),GJCFO(NSTAT),ECFO(NSTAT),GCFO(N
     1STAT))
C
C                *FLEX LOADS*
 836  IF (TEIGJ(4)) 839,839,837
 837  IDT = 4
      CALL ACEIGJ(NSTAT,IDT,EICFL(NSTAT),GJCFL(NSTAT),ECFL(NSTAT),GCFL(N
     1STAT))
C
C             ***LOOP FOR NEXT STATION***
 839  CONTINUE
C
C
C             ***PRINT STIFFNESS SUMMARY DATA ON IPB=1***
      IF (IPB) 899,839,8400
 8400 WRITE(6,840)
  840 FORMAT(20H1  ***ASTIFF SUBR***,/6H0   CD)
 841  FORMAT (1H ,1X,I3,2X,5E16.8)
C
      DO 842 N=1,400,5
      K = N + 4
      WRITE (6,841)N,(CD(I),I=N,K,1)
 842  CONTINUE
C
C                                                                       ASTF9900
C             ***EXIT***                                                ASTF9910
 899  RETURN                                                            ASTF9990
      END                                                               ASTF9999
C**********************************************************************
C
C       *****SUBROUTINE ACEIGJ*****
C   ***TORQUE-BOX EI/GJ EVALUATION - ADV. COMP. ANALYSIS***
C
C**********************************************************************
C
      SUBROUTINE ACEIGJ(NS,ID,AEI,AGJ,AE,AG)
C
```

CARD NO **** CONTENTS ****

```
C          ***SUBR TO CALC EI, GJ, E, G ST STAINS), GIVEN L,M,N***
C           **VALUE OF E, G = F(ID) FOR TEMPERATURE EFFECTS**
C           **L,M,N FOR UPR, LWR, FS, RS IN EL ARRAY**
C            *E AND G TO BE OUTPUT AS NOMINAL VALUES---
C            *     E=EI(CALC)/I(CALC)
C            *     G=GJ(CALC)/J(CALC)*
C
C          ***CONTROL ID = TSF(41).***
C           **0=CALC SECTION GEOMETRY DATA AND ELEMENT E,G**
C           **1=SKIP SECTION GEOMETRY CALC.  CALC ONLY ELEMENT E,G**
C            *     SINCE REQD DATA CALC ON PREVIOUS CALL*
C
C
C
      COMMON T(9160)
C
      DIMENSION D(2060),CD(2000),ND(100),TH(900),CT(2048),DC(100),
     1ENP(9),EL(15),ENOC(6,4),REFSTE(4),REFSTO(4),
     2TA(40),TSF(60),
     4APRTID(12),
     9TBH(11)
C
      EQUIVALENCE (D(1),T(2061)),(CD(1),T(4121)),(ND(1),T(6121)),
     1(TH(1),T(6221)),(CT(1),T(7121)),(DC(1),D(1401)),
     2(ENP(1),D(1155)),(ENOC(1,1),TH(787)),(EL(1),T(1300)),
     3(REFSTE(1),TH(811)),(REFSTO(1),TH(815)),
     4(TA(1),CD(401)),(TSF(1),CD(441)),
     5(APRTID(1),T(1070)),
     9(TBH(1),T(542)),(DFREIK,DC(4))
C
C
C
C            ***TEST TSF(11) FOR TYPE OF CALC***
  100 IF (TSF(11)) 101,101,150
C
C             **CALC SECTION GEOMETRY DATA FOR FIRST ST PASS OR VF PASS
  101 TA(36) = (TSF(53) + TSF(54))/D(2)
      TA(37) = (TSF(55) + TSF(56))/D(2)
      DO 102 I=1,2
      TA(I+11) = TSF(I+11) - TA(I+35)
      TA(I+13) = TSF(I+13) - TA(37)
      TA(I+15) = TSF(I+15) - TA(36)
      TA(I+17) = TSF(I+17) + TSF(I+52)
      TA(I+19) = TSF(I+19) + TSF(I+54)
      TA(I+33) = TSF(I+25) + TSF(I+52)/D(2)
  102 CONTINUE
C
      TA(1) = TA(2)*TA(3)*TA(2)*TA(3)
C
C            ***J(SECTION)***
      TA(2) = DC(3)
      DO 103 I=1,4
      TA(2) = TA(2) + TA(I+13)/TA(I+17)
  103 CONTINUE
      TA(2) = D(4)*TA(1)/TA(2)
C
C             **CALC I(SECTION) DATA**
C              *I(TOTAL) FOR COVERS*
      DO 104 I=1,2
      TA(I+21) = TBH(6)*TA(I+17)*(TA(I+17)/12.0*TA(I+17)
     1                  + TA(12)/D(4)*TA(12))
C
      TA(I+23) = TBH(6). (TSF(I+4) + TSF(I+2)*(TA(12)/D(2) - TA(I+33) -
     1TSF(7))**2)
C
      TA(I+25) = TSF(I+34)*TA(16)/D(4)*TA(16) + TSF(I+40)
      TA(I+27) = TSF(I+38)*TA(17)/D(4)*TA(17) + TSF(I+42)
C
      TA(I+29) = TSF(I+28)*(TA(16)/2.-TA(I+33)- TSF(I+33))**2 +TSF(I+44)
      TA(I+31) = TSF(I+30)*(TA(17)/2.-TA(I+33)- TSF(I+38))**2 +TSF(I+46)
C
```

```
CARD NO  ****                          CONTENTS                          ****
 9467          TA(I+2) + TA(I+21) + TA(I+23) + TA(I+25) + TA(I+27) + TA(I+29) + T
 9468         1A(I+31)
 9469      184  CONTINUE
 9470      C
 9471           TA(I) = TA(3) + TA(4)
 9472      C
 9473      C
 9474      C            ***CALC E(UPR,LWR), G(UPR,LWR,FS,RS)*E(L,M,N,MATL PROP)**
 9475       150  DO 159 I=1,4
 9476            N = I*ND(3) - ND(2)
 9477            IF (I - ND(4)) 152,151,152
 9478       151  N = I*ND(3) + ND(1)
 9479       152  IF (I - ND(2)) 153,153,154
 9480      C
 9481      C              *E(UPR/LWR)*
 9482       153  TA(I+4) = (ENOC(1,ID)/1000000.0*EL(N) + ENOC(4,ID) 1000000.0*D(2)*
 9483           1EL(N+1) + ENOC(2,ID)/1000000.0*EL(N+2))*ENP(9)*D(2)/TA(I+17)
 9484      C
 9485      C              *G(UPR,LWR FS,RS)*
 9486       154  TA(I+8) = (REFSTG(ID)/1000000.0*(EL(N) + EL(N+2)) + ENOC(6,ID)/100
 9487           10000.0*D(2)*EL(N+1))*ENP(9)*D(2)/TA(I+17)
 9488       159  CONTINUE
 9489      C            ***CALC SECTION EI, GJ AND NOMINAL E,G***
 9490      C
 9491      C             **E(U,L) = E(SK)*I(SK) + E(STR/CAP)*I(STR/CAP) +
 9492      C             **     E(SK)*I(DEL FS/RS COV) + E(SK)*I(FS/RS)*E*I(FSRS)**
 9493       160  AFI = DC(3)
 9494            DO 161 I=1,2
 9495            AEI = AEI + REFSTE(ID)/1000000.0*TA(I+23) + TA(I+4)*(TA(I+21) + TA
 9496           1(I+25) + TA(I+27) + DIRE(K*(TA(I+29) + TA(I+31)))
 9497       161  CONTINUE
 9498            AE = AEI/TA(1)*1000000.0
 9499            AEI = AEI*1000000.0
 9500      C
 9501      C
 9502      C            **GJ(SECT) = (4*(A**2)/SUM((DS(I)/T(I))/G(I)))**
 9503            AGJ = 0.0
 9504            DO 162 I=1,4
 9505            AGJ = AGJ + TA(I+13)/TA(I+17) TA(I+6)
 9506       162  CONTINUE
 9507            AGJ = D(4)*TA(1)/AGJ
 9508            AG = AGJ/TA(2)*1000000.0
 9509            AGJ = AGJ*1000000.0
 9510      C
 9511      C
 9512      C            ***PRINT SECTION DATA ON APRTID(NS) = I***
 9513       190  IF (APRTID(NS)) 199,199,194
 9514       194  WRITE (6,195)NS,ID
 9515            WRITE (6,198)AEI,AGJ,AE,AG
 9516      C
 9517       195  FORMAT (24H0  **ACEIGJ SUBR -- STA 12,8H  ID= ,11,2H**)
 9518       198  FORMAT (1H0,8X,4E16.8,/6H0  TA )
 9519       1980 FORMAT (6H0 TSF )
 9520       197  FORMAT (3X,12,3X,4E16.8)
 9521      C
 9522            DO 198 N=1,40,5
 9523            K = N + 4
 9524            WRITE (6,197)N,(TA(I),I=N,K,1)
 9525       198  CONTINUE
 9526      C
 9527            WRITE (6,1980)
 9528            DO 1980 N=1,60,5
 9529            K = N + 4
 9530            WRITE (6,197)N,(TSF(I),I=N,K,1)
 9531       1980 CONTINUE
 9532      C
 9533      C
 9534      C            ***EXIT***
 9535       199  RETURN
 9536            END
 9537      C**************************************************************************
```

```
CARD NO   ****                    CONTENTS                    ****

      C
      C        *****SUBROUTINE ACNSTR*****
      C    ***SECTION DESIGN DATA-WT ANALYSIS CONTROL - ADV. COMP. ANALYSIS***
      C
      C**********************************************************************
      C
            SUBROUTINE ACNSTR                                             ACNS0010
      C                                                                   CNSR0100
      C                                                                   CNSR0120
      C                                                                   CNSR0140
            COMMON T(2260),D(2660),CD(2000),TO(100),TH(300),CT(2048)     CNSR0150
      C                                                                   CNSR0160
            DIMENSION DC(100),TDC(200),TSC(420),TSS(100),THT(400),TSEC(300), CNSR0170
           1TC(340),TO(40),TT(24),DEL(30),                                CNSR0171
           2TEN(1),                                                       CNSR0172
           3CJONT(1),CBLHO(1),SLCFS(5),SWBCP(2),SWBCF(2),                 CNSR0173
           9YBUD(1),YSLD(1),YBU(1),YBL(1)                                 CNSR0179
      C                                                                   CNSR0180
            DIMENSION CNT(38),SFB(33),SFN(33),SPCRUM(1),DLRGUM(44),       CNSR0109
           1ENP      (2)(4),ENC(3),EL(15),                                CNSR0189
           2IEL(15,11),CRLC(7,11),FCR(10,11),STRESS(6,11,20),             CNSR0189
           3STRING(2,10,11),                                              CNSR0183
           4DBRU(1),BFRL(1),                                              CNSR0184
           5SHKMS(2),                                                     CNSR0185
           6SKDOU(1),STNOU(1),SKNOL(1),STNOL(1),                          CNSR0186
           7FSKU(1),FSTU(1),FSKL(1),FSTL(1),                              CNSR0187
           8DOSTR(330),                                                   CNSR0188
           9DOUC(220),DOLC(220),DOIS(220),DOFS(220),DORS(220)             CNSR0189
      C                                                                   CNSR0190
      C                                                                   CNSR0200
            EQUIVALENCE (DC(1),D(1401)),(TDC(1),T(1341)),(TSC(1),D(1541)), CNSR0210
           1(TSS(1),T(1551)),(THT(1),CD(1101)),(TSEC(1),CD(1501)),        CNSR0211
           2(TC(1),T(1503)),(TO(1),T(920)),(TT(1),T(1317)),               CNSR0212
           3(SWBCF(1),D(427)),(CFRIB,D(400)),(DERIB,D(464)),              CNSR0213
           4(SWBCP(1),D(423)),(DBLHO(1),D(C50)),(DJONT(1),D(GG1)),        CNSR0214
           5(SLCFS(1),D(1470)),(DEL(1),THT(251)),(TDN(1),T(542)),         CNSR0215
           6(CBLHO,THT(200)),(CJONT,THT(201)),(YBU(1),TSEC(133)),         CNSR0216
           7(YBL(1),TSEC(166)),(YBUD(1),T(679)),(YBLD(1),T(693)),         CNSR0217
           8(DLSKU,DEL(2)),(DLSKL,DEL(5  ),(DLFSH,DEL(15)),(DLRSH,DEL(19)), CNSR0218
           9(ISEC,ND(55)),(NDOM,ND(56)),(IC,ND(48)),(IPB,ND(24)),(IF4,ND(93)) CNSR0219
           A,(PFFSCV,CT(2047)),(PFFSSP,CT(2048))                          CNSR0220
           B,(SKDOU(1),TH(166)),(STNOU(1),TH(177)),(FSKU(1),TH(188))      CNSR0221
           C,(FSTU(1),TH(199)),(SKNOL(1),TH(210)),(STNOL(1),TH(221))      CNSR0222
           D,(FSKL(1),TH(232)),(FSTL(1),TH(243))                          CNSR0223
           E,(BRRU(1),TH(254)),(BRRL(1),TH(265))                          CNSR0224
      C                                                                   CNSR0230
      C                                                                   CNSR0270
            EQUIVALENCE (ENP(1),D(1155)),(ENH(1),D(1164)),(ENC(1),CT(2043)), ENSR0280
           1(EL(1),T(1350)),(CNT(1),T(1541)),(C7,CNT(22)),                CNSR0281
           2(CRLC(1,1),T(960)),(FCR(1,1),T(1100)),(IEL(1,1),TH(1)),       CNSR0282
           3(STRESS(1,1,1),CT(1)),(STRING(1,1,1),T(1676)),                ENSR0283
           4(SFB(1),T(1232)),(SPN(1),T(1265)),(SPCRUM(1),T(1632)),        ENSR0284
           5(DLRGUM(1),CD(339)),(SHKMS(1),D(410)),(DKMIR,D(24)),          CNSR0265
           6(C9,CNT(34)),(C10,CNT(35)),                                   CNSR0285
           C(DOUC(1),CD(1)),(DOLC(1),CD(221)),(DOIS(1),CD(441)),          CNSR0288
           9(DOFS(1),CD(651)),(DORS(1),CD(C81))                           ENSR0289
           A,(TCPNLU,CNT(29)),(TCPNLL,CNT(30)),(TCPNLI,CNT(31))           CNSR0289
           B,(TCPNLF,CNT(32)),(TCPNLR,CNT(33))                            CNSR0289
           C,(DOSTR(1),CT(1321)),(ACID,D(430))                            CNSR0289
           C,(XXCODE,CNT(19)),(XPCODE,CNT(20))                            CNSR0289
           D,(XFCODE,CNT(27)),(XRCODE,CNT(28))                            CNSR0289
      C                                                                   CNSR0290
      C                                                                   CNSR0300
      C
            REAL IEL
      C
      C
      C
      C             ***PROCESS SYNTHESIS DATA FOR OUTPUT SUMMARY AND
      C             ***     WEIGHT ANALYSIS***
      C
```

```
CARD NO  ****                          CONTENTS                          ****
 5609      C              *SAVE STIFFNESS DATA ON RCD NO-- 400 CELLS--CD(1-4001*
 5610       600  CALL WRITMS (1,CD(1),400,N3)
 5611      C
 5612      C              **RELOCATE DELTA M LAYERS FOR WF BEFORE CLEAR**
 5613      C               *SAVE IN TSS(1-44)*
 5614            DO 6000 I=1,44
 5615            TSS(I) = DLRGUM(I)
 5616       6000 CONTINUE
 5617      C
 5618      C              *CLEAR CD(1-1100) AND DDSTR(1-2220)*
 5619            DO 601 I=1,1100
 5620            CD(I) = DC(3)
 5621       601  CONTINUE
 5622      C
 5623            DO 6010 I=1,330
 5624            DDSTR(I) = DC(3)
 5625       6010 CONTINUE
 5626      C
 5627      C             ***SETUP DESIGN DATA SUMMARY FOR 11 STATIONS***
 5628      C              **5 BLOCKS OF DATA FOR EAR
 5629      C              **5 BLOCKS OF DATA FOR EACH STATION--20 ITEMS/BLOCK**
 5630      C               *BLOCK 1=UPPER COVER DATA*
 5631      C               *BLOCK 2= LOWER COVER DATA*
 5632      C               *BLOCK 3= INTERM/SPAR DATA*
 5633      C               *BLOCK 4= FRONT SPAR DATA*
 5634      C               *BLOCK 5= REAR/SPAR DATA*
 5635      C
 5636      C              **BLOCK 6=COVER STR DATA FOR H/RIB CONST **
 5637      C
 5638      C               *ID=ACID.  1=H/RIB, 2=H/SPAR*
 5639      C
 5640      C              **PROCESS THICKNESS DATA**
 5641            DO 638 N=1,11
 5642            DO 632 I=1,15
 5643            EL(I) = IEL(I,N)
 5644       602  CONTINUE
 5645      C
 5646      C               *DDUC(1-220)=UPPER COVER ARRAY*
 5647      C               *DDLC(1-220)=LOWER COVER ARRAY*
 5648      C               *DDIS(1-220)=INTERM SPAR ARRAY*
 5649      C               *DDFS(1-220)=FRONT SPAR ARRAY*
 5650      C               *DDRS(1-220)=REAR SPAR ARRAY*
 5651      C
 5652            DDUC(N+66) = EL(1)*D(2)
 5653            DDUC(N+77) = EL(2)*D(4)
 5654            DDUC(N+88) = EL(3)*D(2)
 5655      C
 5656      C               *DELTA M LAYERS FOR WF STORED IN TT(14-24)*
 5657      C               *DELTA M-PLIES STORED IN TSS(1-44)*
 5658            DDUC(N+99) = TSS(N)*D(2)
 5659            DDUC(N+121) = ENP(1)*(DDUC(N+66) + DDUC(N+77) + DDUC(N+88))
 5660            DDUC(N+143) = ENP(9)*DDUC(N+99)
 5661      C
 5662      C               *TEST FOR H/PNL*
 5663            IF (D(2) - XXCODE) 603,603,604
 5664       603  DDUC(N+110) = TCPNLU
 5665            DDLC(N+110) = TCPNLL
 5666      C
 5667      C              **TEST FOR H/RIB OR H/SPAR OR FDH**
 5668       604  IF (ACID - D(1)) 6040,6040,6042
 5669      C
 5670      C             ***H/RIB COVER DATA***
 5671       6040 DDSTR(N) = STRING(1,1,N)
 5672            DDSTR(N+11) = STRING(1,9,N)
 5673            DDSTR(N+22) = STRING(1,8,N)
 5674            DDSTR(N+33) = STRING(1,6,N)
 5675            DDSTR(N+44) = STRING(1,7,N)
 5676            DDSTR(N+55) = STRING(1,10,N)
 5677            DDSTR(N+66) = STRING(1,5,N)
 5678            DDSTR(N+77) = STRING(1,4,N)
 5679            DDSTR(N+88) = STRING(1,2,N)
```

CARD NO **** CONTENTS ****

```
      DOSTR(N+99) = DOSTR(N+11)/DOSTR(N)
      DOIS(N+165) = SPN(N)
      DOIS(N+154) = DOSTR(N+88)
      DOSTR(N+220) = SKNXU(N)
      DOSTR(N+231) = STNXU(N)
      DOSTR(N+242) = FSKU(N)
      DOSTR(N+253) = FSTU(N)
      DOSTR(N+264) = BRRU(N)
C
C               *LOWER COVER*
      DOSTR(N+110) = STRING(1,1,N)
      DOSTR(N+121) = STRING(2,9,N)
      DOSTR(N+132) = STRING(2,8,N)
      DOSTR(N+143) = STRING(2,6,N)
      DOSTR(N+154) = STRING(2,7,N)
      DOSTR(N+165) = STRING(2,10,N)
      DOSTR(N+176) = STRING(2,5,N)
      DOSTR(N+187) = STRING(2,4,N)
      DOSTR(N+198) = STRING(1,2,N)
      DOSTR(N+209) = DOSTR(N+121)/DOSTR(N+110)
      DOSTR(N+275) = SKNXL(N)
      DOSTR(N+286) = STNXL(N)
      DOSTR(N+297) = FSKL(N)
      DOSTR(N+308) = FSTL(N)
      DOSTR(N+319) = BRRL(N)
C
C               *L(RIB) TEST*
      IF (DOSTR(N+198) - DOIS(N+154)) 6041,6046,6046
 6041 DOIS(N+154) = DOSTR(N+198)
      GO TO 6046
C
C
C               *TEST FOR FULL DEPTH HONEYCOMB*
 6042 IF (D(3) - XPCODE) 6043,6043,6045
 6043 DOIS(N+154) = SPB(N+22)/EN(1)
      DOIS(N+165) = SPN(N)
      DOIS(N+132) = DBRHO/E(8)
      DOIS(N+121) = SPN(N+22)/FN(1)
      TSEC(241) = D(1)
      TT(1) = 0.0
      GO TO 6046
C
C               **NO OF SPARS AND SPACINGS**
C               ***CAP T-BAR = AREA/B*(NOS/(NOS+1))
 6045 DOIS(N+154) = SPB(N)
      DOIS(N+165) = SPN(N) - D(2)
      TSEC(241) = DOIS(N+165)/(DOIS(N+165) + D(1))
      DOIS (N+132) = C7*DOUC(N+121)
      TT(1) = DOIS(N+132)/DOIS(N+154)*TSEC(241)
C
C               **LOWER COVER**
 6046 DOLC(N+66) = EL(4)*D(2)
      DOLC(N+77) = EL(5)*D(4)
      DOLC(N+88) = EL(6)*D(2)
      DOLC(N+99) = TSS(N+11)*D(2)
      DOLC(N+121) = ENP(9)*(DOLC(N+66) + DOLC(N+77) + DOLC(N+88))
      DOLC(N+132) = DOLC(N+121) + TT(1)
      DOLC(N+143) = DOLC(N+99)*ENP(9)
C
      DOUC(N+132) = DOUC(N+121) + TT(1)
C
C               *TEST FOR M/RIB**
      IF (ACID - D(1)) 6047,6047,6048
 6047 DOUC(N+132) = DOUC(N+121) + DOSTR(N+99)
      DOLC(N+132) = DOLC(N+121) + DOSTR(N+209)
      DOUC(N+154) = DOUC(N+121)/D(2) + STRING(1,3,N)
      DOLC(N+154) = DOLC(N+121)/D(2) + STRING(2,3,N)
      GO TO 6048
C
 6048 DOUC(N+154) = (DOUC(N+121)*(DOUC(N+121) + DOUC(N+110))/D(2) + TT(1
     1)*(TT(1)/D(2) + DOUC(N+121) + DOUC(N+110)))/(DOUC(N+121) + TT(1))
```

```
CARD NO  ****                          CONTENTS                          ****
 5751          DDLC(N+154) = (DDLC(N+121)*(DDLC(N+121) + DDLC(N+110))/D(2) + TT(1
 5752         1)*(TT(1)/D(2) + DDLC(N+121) + DDLC(N+110)))/(DDLC(N+121) + TT(1))
 5753      C
 5754      C              **INTERM SPAR/RIBS**
 5755       6049 DDIS(N+66) = EL(10)*D(2)
 5756            DDIS(N+77) = EL(11)*D(4)
 5757            DDIS(N+88) = EL(12)*D(2)
 5758            DDIS(N+99) = DC(3)
 5759            IF (XPCODE - D(2)) 605,605,6050
 5760       605  DDIS(N+121) = ENP(9)*(DDIS(N+66) + DDIS(N+77) + DDIS(N+88))
 5761            DDIS(N+143) = DC(3)
 5762      C
 5763      C              **TEST FOR H/PNL**
 5764       6050 IF (D(2) - XPCODE) 606,6051,606
 5765       6051 DDIS(N+110) = TCPNLI
 5766      C
 5767      C              **FRONT SPAR**
 5768       606  DDFS(N+66) = EL(7)*D(2)
 5769            DDFS(N+77) = EL(8)*D(4)
 5770            DDFS(N+88) = EL(9)*D(2)
 5771            DDFS(N+99) = TSS(N+22)*D(2)
 5772            DDFS(N+121) = ENP(9)*(DDFS(N+66) + DDFS(N+77) + DDFS(N+88))
 5773            DDFS(N+143) = DDFS(N+99)*ENP(9)
 5774      C
 5775      C              *TEST FOR H/PNL*
 5776            IF (D(2) - XFCODE) 607,607,608
 5777       607  DDFS(N+110) = TCPNLF
 5778      C
 5779      C              **FRONT SPAR CAPS**
 5780       608  TT(1) = DDUC(N+132)
 5781            TT(2) = DDLC(N+132)
 5782            DO 611 I=1,2
 5783            TT(I+2) = TT(I)*SLCFS(4)
 5784            IF (TT(I+2) - SLCFS(3)) 609,610,610
 5785       609  TT(I+2) = SLCFS(3)
 5786       610  TT(I+4) = TT(I+2)*SWDCP(1) + DDFS(N+121)*SWDCP(1)/D(2)
 5787       611  CONTINUE
 5788            DDFS(N+132) = TT(5)
 5789            DDFS(N+154) = TT(6)
 5790      C
 5791      C              *REAR SPAR**
 5792            DDRS(N+66) = EL(13)*D(2)
 5793            DDRS(N+77) = EL(14)*D(4)
 5794            DDRS(N+88) = EL(15)*D(2)
 5795            DDRS(N+99) = TSS(N+33)*D(2)
 5796            DDRS(N+121) = ENP(9)*(DDRS(N+66) + DDRS(N+77) + DDRS(N+88))
 5797            DDRS(N+143) = DDRS(N+99)*ENP(9)
 5798      C
 5799      C              *TEST FOR H/PNL*
 5800            IF (D(2) - XRCODE) 612,612,613
 5801       612  DDRS(N+110) = TCPNLR
 5802      C
 5803      C              *REAR SPAR CAPS*
 5804       613  DO 614 I=1,2
 5805            TT(I+4) = TT(I+2)*SWDCP(2) + DDRS(N+121)*SWDCP(2)/D(2)
 5806       614  CONTINUE
 5807            DDRS(N+132) = TT(5)
 5808            DDRS(N+154) = TT(6)
 5809      C
 5810      C            ***PROCESS LOAD AND STRESS DATA***
 5811      C              *FCH ARRAY=CRITICAL LOAD*
 5812      C              *STRESS ARRAY= REQD LOAD, SPCRUH ARRAY=CRUSHING SP LDS*
 5813      C              *CRLC ARRAY=CRITICAL LOAD ID--I=20=ST, I+20=STABILITY*
 5814      C
 5815      C              *CRITICAL LOAD AND STRESSES*
 5816       620  DO 621 I=1,10
 5817            TT(I) = FCH(I,N)
 5818       621  CONTINUE
 5819            DDUC(N+176) = TT(1)
 5820            DDUC(N+187) = TT(2)
 5821            DDUC(N+198) = TT(1)/DDUC(N+121)
```

```
      DOUC(N+209) = TT(2)/DOUC(N+121)
C
      DOLC(N+176) = TT(3)
      DOLC(N+187) = TT(4)
      DOLC(N+198) = TT(3)/DOLC(N+121)
      DOLC(N+209) = TT(4)/DOLC(N+121)
C
      DOIS(N+176) = TT(5)
      DOIS(N+187) = TT(6)
      DOIS(N+198) = TT(5)/DOIS(N+121)
      DOIS(N+209) = TT(6)/DOIS(N+121)
C
      DOFS(N+176) = TT(7)
      DOFS(N+187) = TT(8)
      DOFS(N+198) = TT(7)/DOFS(N+121)
      DOFS(N+209) = TT(8)/DOFS(N+121)
C
      DORS(N+176) = TT(9)
      DORS(N+187) = TT(10)
      DORS(N+198) = TT(9)/DOFS(N+121)
      DORS(N+209) = TT(10)/DORS(N+121)
C
C                 **CRITICAL LOAD CONDITION ID**
      DO 622 I=1,7
      TT(I) = CALC(I,N)
  622 CONTINUE
C
      DOUC(N) = TT(1)
      DOLC(N) = TT(2)
      DOIS(N) = TT(7)
      DOFS(N) = TT(7)
      DORS(N) = TT(7)
      DOUC(N+11) = TT(3)
      DOLC(N+11) = TT(3)
      DOIS(N+11) = TT(5)
      DOFS(N+11) = TT(4)
      DORS(N+11) = TT(6)
C
C                 **PROCESS CRITICAL LOAD CONDITION LOADS**
      K = TT(1)
      DOUC(N+22) = STRESS(1,N,K)
      DOUC(N+44) = DOUC(N+22)/DOUC(N+121)
      K = TT(2)
      DOLC(N+22) = STRESS(2,N,K)
      DOLC(N+44) = DOLC(N+22)/DOLC(N+121)
C
      IF (ACID - 1.0) 6220,6220,6221
 6220 DOUC(N+44) = FSKU(N)
      DOLC(N+44) = FSKL(N)
      DOUC(N+165) = FSTU(N)
      DOLC(N+165) = FSTL(N)
C
 6221 K = TT(7)
      DOIS(N+22) = SPCRUH(K)
      DOFS(N+22) = SPCRUH(K)
      DORS(N+22)   SPCRUH(K)
      DOIS(N+44) = DOIS(N+22)/DOIS(N+121)
      DOFS(N+44) = DOFS(N+22)/DOFS(N+121)
      DORS(N+44) = DORS(N+22)/DORS(N+121)
C
C                 **KY -CHECK FOR STABILITY ID = ID + 20**
      K = TT(3)
      IF (20 - K) 623,624,624
  623 K = K- 20
  624 DOUC(N+33) = STRESS(3,N,K)
      DOLC(N+33) = DOUC(N+33)
      DOUC(N+55) = DOUC(N+33)/DOUC(N+121)
      DOLC(N+55) = DOLC(N+33)/DOLC(N+121)
C
C                 *I/SPARS*
      K = TT(5)
```

```
CARD NO  ****                          CONTENTS                          ****

 5893          IF ( 0 - K) 625,626,626
 5894    625   K = K - 20
 5895    626   DDIS(N+33) = STRESS(5,N,K)
 5896          DDIS(N+55) = DDIS(N+33)/DDIS(N+121)
 5897    C
 5898    C               *F/SPAR*
 5899          K = TT(4)
 5900          IF (20 - K) 627,628,628
 5901    627   K = K - 20
 5902    628   DDFS(N+33) = STRESS(4,N,K)
 5903          DDFS(N+55) = DDFS(N+33)/DDFS(N+121)
 5904    C
 5905    C               *R/SPAR*
 5906          K = TT(6)
 5907          IF (20 - K)629,630,630
 5908    629   K = K - 20
 5909    630   DDRS(N+33) = STRESS(6,N,K)
 5910          DDRS(N+55) = DDRS(N+33)/DDRS(N+121)
 5911    C
 5912    C             ***LOOP FOR NEXT STATION***
 5913    638   CONTINUE
 5914    C
 5915    C
 5916    C             ***PRINT COMPONENT DATA ARRAYS ON IPB=1***
 5917          IF (IPB) 650,650,639
 5918    639   WRITE (6,6390)
 5919    6390 FORMAT (2BH1  ***SECTION DESIGN DATA***,/6H0 DDUC)
 5920    6391 FORMAT (1H 2X,13,9E10.8)
 5921    6392 FORMAT (6H1 DDLC)
 5922    6393 FORMAT (6H1 DDIS)
 5923    6394 FORMAT (6H1 DDFS)
 5924    6395 FORMAT (6H1 DDRS)
 5925    C
 5926          DO 6398 N=1,220,5
 5927          K = N + 4
 5928          WRITE (6,6391)N,(DDUC(I),I=N,K,1)
 5929    6398 CONTINUE
 5930    C
 5931          WRITE (6,6392)
 5932          DO 6397 N=1,220,5
 5933          K = N + 4
 5934          WRITE (6,6391)N,(DDLC(I),I=N,K,1)
 5935    6397 CONTINUE
 5936    C
 5937          WRITE (6,6393)
 5938          DO 6398 N=1,220,5
 5939          K = N + 4
 5940          WRITE (6,6391)N,(DDIS(I),I=N,K,1)
 5941    6398 CONTINUE
 5942    C
 5943          WRITE (6,6394)
 5944          DO 6399 N=1,220,5
 5945          K = N + 4
 5946          WRITE (6,6391)N,(DDFS(I),I=N,K,1)
 5947    6399 CONTINUE
 5948    C
 5949          WRITE (6,6395)
 5950          DO 6400 N=1,220,5
 5951          K = N + 4
 5952          WRITE (6,6391)N,(DDRS(I),I=N,K,1)
 5953    6400 CONTINUE
 5954    C
 5955    C             **TEST FOR FLYRIB DESIGN**
 5956          IF (ACID - D(1)) 6401,6401,650
 5957    6401 WRITE (6,6402)
 5958    6402 FORMAT (6H1 DDSTR )
 5959          DO 6403 N=1,330,5
 5960          K = N + 4
 5961          WRITE (6,6391)N,(DDSTR(I),I=N,K,1)
 5962    6403 CONTINUE
 5963    C
```

CARD NO **** CONTENTS ****

```
C
C             ***PROCESS WEIGHTS***
C
C              **SETUP REQD DATA FOR WTCAL SUBR**
C               *CALC DATA TIP TO ROOT*
C               *SET IC=1 AND CLEAR TWT(1-153)*
  650 IC = ND(1)
      DO 651 I=1,153
      TWT(I) = DC(3)
  651 CONTINUE
C
C             ***SECTION 1-11=TIP TO ROOT***
      DO 699 ISEC=1,11
      N = ND(12) - ISEC
C
      IF (ND(2) - ISEC) 652,652,653
  652 IC = ND(2)
  653 CBLHD = DBLHD(N)
      CJONT = DJONT(N)
C
      TDC(74) = TSEC(ISEC+66)
C
      TDC(80) = ABS(TSEC(ISEC))
      TDC(79) = ABS(TSEC(ISEC+11))
      TDC(78) = TSEC(ISEC+55)
      TDC(..) = TSEC(ISEC+44)
      TDC(75) = TSEC(ISEC+22)
      TDC(76) = TSEC(ISEC+33)
C
      TDC(69) = TSEC(ISEC+77)
      TDC(70) = TSEC(ISEC+88)
C
C              **MOVE DESIGN SUMMARY DATA FOR WTCAL SUBR**
      TDC(72) = DDUC(N+22)
      TDC(71) = DDLC(N+22)
      TDC(81) = DDIS(N+165)
      TDC(82) = DDIS(N+154)
C
C              **EFF WIDTH WT FACTORS**
      TSEC(240) = (SLCFS(1) + SLCFS(2))/TDC(77)
      TSEC(239) = SLCFS(5)*TSEC(240) + D(1) + (SWBCP(1) + SWBCP(2))/TDC(
     177)
      TSEC(240) = TSEC(240) + D(1)
C
      TSEC(241) = D(1)
      IF (XPCODE - D(2)) 6530,6530,6531
 6530 TSEC(241) = TDC(81)/(TDC(81) + D(1))
 6531 TSEC(243) = TSEC(241)
      TSEC(243) = TSEC(241)
      TSEC(242) = TSEC(240)
      TSEC(233) = TSEC(241)
      TSEC(225) = C9
      TSEC(229) = C10
C
      TDC(83) = DDUC(N+198)
      TDC(84) = DDUC(N+44)
      TDC(85) = DDUC(N+209)
      TDC(86) = DDUC(N+55)
      TDC(88) = DDUC(N+132)
      TDC(87) = DDLC(N+132)
      TDC(114) = DDUC(N+121)
      TDC(112) = DDLC(N+121)
C
C             ***INTERM WEBS--SPARS OR RIBS***
C             ***HC/PNL INSERTS IN T-BAR MISC SKIN(UPR,LWR)***
C               **TEST FOR FDH**
      IF (D(3) - XPCODE) 6532,6532,6533
 6532 TDC(95) = DBRHO/ENP(8)
      TDC(96) = TDC(95)
      TDC(87) = TDC(87) + TDC(95)
      TDC(100) = D(1)
```

```
CARD NO    ****                          CONTENTS                          ****
  6035              GO TO 6534
  6036         6533 TDC(95) = DDIS(N+132) + C9
  6037              TDC(96) = TDC(95)/TDC(82)*TSEC(241)
  6038              TDC(87) = C10/TDC(82)*TSEC(241) + TDC(87)
  6039              TDC(100) = TDC(82)
  6040         6534 TDC(107) = DDIS(N+121)
  6041              TDC(89) = DC(3)
  6042         C
  6043         C
  6044              TDC(109) = DDUC(N+154)
  6045              TDC(110) = DDLC(N+154)
  6046         C
  6047         C              ***PROCESS HC/P&L AND PROTECTIVE FINISH DATA AS READ***
  6048         C                *UPR/LWR INSERT AREA = C9 AND C10- 0.0 FOR PLATES/STR***
  6049              TDC(101) = DDUC(N+110)*ENC(1)/ENP(8)
  6050              TDC(102) = DDLC(N+110)*ENC(1)/ENP(8)
  6051              TDC(103) = DDIS(N+110)*ENC(1)/ENP(8)
  6052              TDC(104) = PFFSCV/ENP(8)
  6053              TDC(105) = PFFSCV/ENP(8)
  6054              TDC(106) = PFFSSP*ENP(8)
  6055              TT(2) = CFRIB
  6056         C
  6057         C                *TT(4,5) = TBAR(FILLER-UPR/LWR) AT SPAR/RIB FOR
  6058         C                *     W/SPAR AND W/RIB ONLY*
  6059         C                *     TT(4,5) = 0.0 FOR FDH*
  6060              TT(4) = D(2)*ENP(9)*DDUC(N+66)
  6061              TT(5) = D(2)*ENP(9)*DDLC(N+66)
  6062              TT(6) = DDUC(N+110) + DDIS(N+132)
  6063              TT(7) = DDLC(N+110) + DDIS(N+132)
  6064              TT(8) = TDC(107)
  6065         C              *FILLER AREA = 2*TOTAL(L-PLIES)*2*T(L)*
  6066         C
  6067          654 IF (D(2) - APCODE) 655,656,657
  6068         C
  6069         C              **FDH**
  6070          655 TT(8) = DDIS(N+121)*ENC(1)/ENP(8)
  6071              TT(1) = D(1)
  6072              TT(2) = D(1)
  6073              TDC(104) = (DBRHO + PFFSCV)/ENP(8)
  6074              TDC(105) = (DBRHO + PFFSCV)/ENP(8)
  6075              TDC(103) = DC(3)
  6076              TDC(106) = DC(3)
  6077              GO TO 659
  6078         C
  6079          656 TDC(106) = (DBRHO + PFFSSP)/ENP(8)
  6080              TT(2) = D(1)
  6081          657  T(1) = TSEC(241)
  6082         C
  6083         C              ***TEST CONST***
  6084              IF (ACID - D(1)) 658,658,659
  6085          658 TT(1) = D(1)
  6086              TT(2) = CFRIB
  6087              TDC(82) = DDSTR(N)
  6088              TDC(95) = DDSTR(N+11)
  6089              TDC(96) = DDSTR(N+29)
  6090              TDC(88) = DDUC(N+121) + TDC(96)
  6091              TDC(173) = DDSTR(N+121)
  6092              TDC(87) = DDLC(N+121) + DDSTR(N+209)
  6093              TT(8) = TDC(107)
  6094              TT(7) = TDC(107)
  6095              TDC(89) = D(2)*TDC(107)/TDC(100)
  6096         C
  6097         C              ***SETUP Y-BAR AND D PRIME DATA AND PROCESS SPAR/RIB DATA*
  6098          659 YBUD(ISEC) = TDC(109)
  6099              YBLD(ISEC) = TDC(110)
  6100              TDC(73) = TDC(78) - TDC(109) - TDC(110)
  6101              TT(3) = TDC(73)*TT(1)/TDC(100)*TT(2)
  6102              TDC(106) = TDC(106)*TT(3)
  6103              TDC(103) = TDC(103)*TT(3)
  6104              TDC(92) = DC(3)
  6105              TDC(89) = TDC(89) + TT(3)*TT(8) + TDC(103) + TDC(106)
```

CARD NO **** CONTENTS ****

```
      IF (XPCODE - D(2)) 6590,6590,6591
 6590 TDC(92) = D(2)*(DYNMIR - D(1))*TDC(89)
 6591 TDC(90) = TDC(101) + TDC(104)
      TDC(109) = TDC(102) + TDC(105)
C
C            ***SPAR/RIB ATT AND SKIN ATT FILLERS--0.0 FOR FDH**
      TDC(91) = DC(3)
      TDC(170) = DC(3)
      TDC(93) = DC(3)
      TDC(171) = DC(3)
      IF (XXCODE - D(1)) 6592,6592,6593
 6592 IF (XPCODE - D(2)) 6593,6593,6599
 6593 TDC(93) = TT(4)/TDC(100)*TT(1)
      TDC(171) = TT(5)/TDC(100)*TT(1)
C
C             **SPAR/RIB ATT--UPR/LWR**
 6594 TDC(91) = 0.001473/ENP(8)*(TDC(114) + TT(4)/D(2) + TT(6) + 0.625)
      TDC(170) = 0.001473/ENP(8)*(TDC(112) + TT(5)/D(2) + TT(7) + 0.625)
C
C             **DELTA T(VF)**
 6599 TDC(116) = DDUC(N+143)
      TDC(117) = DDLC(N+143)
      TDC(118) = DC(3)
      TDC(119) = DC(3)
      TDC(129) = DC(3)
      TDC(175) = DDFS(N+143)
      TDC(176) = DDRS(N+143)
C
C             **SETUP CORRU. FACTORS FOR FS AND RS**
      TT(1) = SWBCF(1)
      IF (D(2) - XFCODE) 660,660,661
  660 TT(1) = D(1)
  661 TT(2) = SWBCF(2)
      IF (D(2) - XRCODE) 662,662,663
  662 TT(2) = D(1)
C
C             **FS/RS CAPS TO INCLUDE INSERTS AREA IF HC/PNL**
  663 TDC(180) = DDFS(N+121)
      TDC(181) = DDFS(N+132) + DDFS(N+154) + C9 + C10
      TDC(187) = DDRS(N+121)
      TDC(188) = DDRS(N+132) + DDRS(N+154) + C9 + C10
      TDC(185) = DDFS(N+110)
      TDC(192) = DDRS(N+110)
      TDC(183) = DDFS(N+55)
      TDC(190) = DDRS(N+55)
      TDC(184) = DDFS(N+209)
      TDC(191) = DDRS(N+209)
C
      DO 666 I=1,2
      K = I*ND(7) - ND(6)
      TDC(K+181) = PFFSSP/ENP(8)
      IF (TDC(K+180)) 665,665,664
  664 TDC(K+181) = (ENC(I)*TDC(K+184) + DBRHO * PFFSSP)/ENP(8)
  665 TDC(I+192) = TT(I)*(TDC(K+179) + TDC(K+181))*(TDC(I+68) - TDC(78)
     1+ TDC(73))
      TDC(K+178) = SWKMS(I)*(TDC(I+192) + TDC(K+180))
      TDC(I+176) = TT(I)*TDC(I+174)*(TDC(I+68) - TDC(78) + TDC(73))
  666 CONTINUE
C
C
C            ***SETUP COMPATIBILITY DATA FOR STCAL***
      TWT(150) = DLSKU*TDC(114)
      TWT(151) = DLSKL*TDC(112)
      TWT(152) = DLFSW*TDC(180)
      TWT(153) = DLRSW*TDC(187)
C
      TSC(36) = DC(3)
      TSC(37) = DC(3)
      TSC(38) = DC(3)
      TSC(39) = DC(3)
C
```

CARD NO **** CONTENTS ****

```
C           ***SETUP TOC(121-139) WITH NO OF PLY DATA FOR FRTB SUBR***
C             *DATA TO INCLUDE L,M,N PLIES FOR UC,LC,IS,FS,RS AND
C             *     DELTA M(VF)*
      TOC(121) = DOUC(N+66)
      TOC(122) = DOUC(N+77)
      TOC(123) = DOUC(N+88)
C
      TOC(124) = DOLC(N+66)
      TOC(125) = DOLC(N+77)
      TOC(126) = DOLC(N+88)
C
      TOC(127) = DOIS(N+66)
      TOC(128) = DOIS(N+77)
      TOC(129) = DOIS(N+88)
C
      TOC(130) = DOFS(N+66)
      TOC(131) = DOFS(N+77)
      TOC(132) = DOFS(N+88)
C
      TOC(133) = DORS(N+66)
      TOC(134) = DORS(N+77)
      TOC(135) = DORS(N+88)
C
      TOC(136) = DOUC(N+99)
      TOC(137) = DOLC(N+99)
      TOC(138) = DOFS(N+99)
      TOC(139) = DORS(N+99)
C        *
C           ***SET TWT(44) = B(N) FOR ID***
      TWT(44) = TOC(82)
C
C           ***SECTION(ISEC) DATA--TYPE B PAGE***
C            **PRINT ONLY ON IPB=1**
      IF (IPB) 670,670,669
C
C             *TYPE B OUTPUT--SECTION DESIGN DETAILS*
  669 CALL PRTB
C
C
C           ***CALC WT/IN AND WT/PANEL***
  670 CALL WTCAL
C
C
C
C            **PNL(I) SUMMARY--TYPE C PAGE**
C             *PRINT ONLY IF IPB=1*
      IF (IPB) 672,672,671
  671 CALL PRTC
C
C                                                                  CNSR2756
C           ***SAVE SECTION SUMMARIES CALC BY WTCAL AND WTPIN***   CNSR2756
C             *PNL(I) WTS FOR PRINT-TYPE A..  PNLS 1-10, ISEC=2-11* CNSR2757
C             *STORED BY PANELS-6/PNL-SUM,TB,LE,TE,MISC,VF*        CNSR2757
C             *PNLS IN TC(142-201) STORED RT-TIP*                  CNSR2757
C             *CUM TOTAL IN TC(134-139).  TC(140)=RT RIB, TC(141)=CSECC(CNSR2757
C             *ALL WTS=LB/SIDE*                                    CNSR2757
  672 IF (ND(2) - ISEC) 673,673,675                                CNSR2756
  673 K = (ND(12) - ISEC)*ND(6)                                    CNSR2756
      DO 674 I=1,6                                                 CNSR2756
      K = K + ND(1)                                                CNSR2756
      TC(K+135) = TWT(I+59)                                        CNSR2756
  674 CONTINUE                                                     CNSR2756
C                                                                  CNSR2756
C             *SECTION CHORDWISE CONC DATA--TWT(381-391)*          CNSR2757
  675 K = (ND(12) - ISEC)*ND(11) - ND(11)                          CNSR2757
      DO 676 I=1,11                                                CNSR2757
      K = K + ND(1)                                                CNSR2757
      TC(K+219) = TWT(I+380)                                       CNSR2757
  676 CONTINUE                                                     CNSR2757
C                                                                  CNSR2757
C
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CARD NO **** CONTENTS ****

```
C            ***LOOP FOR NEXT STATION PANEL***
  693 CONTINUE
C
C
C                                                                        CNSR9900
C              **EXIT**                                                  CNSR9910
  899 RETURN                                                             CNSR9990
      END                                                                CNSR9999
C**********************************************************************
C
C        *****SUBROUTINE ACPRTA*****
C   ***DESIGN DATA PRINT - TYPE A TORQUE-BOX SYNTHESIS SUMMARY - ADV. COMP ***
C
C**********************************************************************
C
      SUBROUTINE ACPRTA                                                  ACPA0010
C       BX PRT SUBR -- TYPE A                                            PRTA0020
C                                                                        PRTA0030
C                                                                        PRTA0150
C                                                                        PRTA0160
C                                                                        PRTA0170
C                                                                        PRTA0190
      COMMON T(2060),D(2060),CD(2000),ND(100),TH(900),CT(2048)           ACPA0200
      COMMON /MISC/ XMISC(100)                                           ACPA0201
C                                                                        PRTA0210
      DIMENSION DC(100),TOC(200),TSC(420),TSS(100),THT(400),TSCC(300),   PRTA0230
     1TC(340),TO(40),TR(40),                                             PRTA0231
     2YSTRC(11),TBWP1(11),GJROD(11),                                     PRTA0232
     3TOGH(3),DGH(3),                                                    PRTA0233
     4TDHV(11),TDHM(11),TDHT(11),                                        PRTA0234
     5ULTPV(11),ULTPM(11),ULTPT(11),                                     PRTA0235
     6ULTNV(11),ULTNM(11),ULTNT(11),                                     PRTA0236
     7YBUI(11),YBLI(11),YBUD(11),YBLD(11),                               PRTA0237
     9R(6)                                                               ACPA0239
C                                                                        PRTA0240
      DIMENSION DDUC(220),DDLC(220),DDIS(220),DDFS(220),DDRS(220),       ACPA0240
     1TEIGJ(4),DDSTR(330),                                               ACPA0241
     2GJSTD(11),EISTD(11),GSTD(11),ESTD(11),                             ACPA0242
     3GJCD(11),EICD(11),GCMD(11),ECMD(11),                               ACPA0243
     4GJVFS(11),EIVFS(11),GVFS(11),EVFS(11),                             ACPA0244
     5GJVFD(11),EIVFD(11),GVFD(11),EVFD(11),                             ACPA0245
     6GJSFO(11),EISFO(11),GSFO(11),ESFO(11),                             ACPA0246
     7GJCFO(11),EICFO(11),GCFO(11),ECFO(11),                             ACPA0247
     8GJSFL(11),EISFL(11),GSFL(11),ESFL(11),                             ACPA0248
     9GJCFL(11),EICFL(11),GCFL(11),ECFL(11)                              ACPA0249
     A,ENH(6)                                                            ACPA0250
C                                                                        ACPA0250
C                                                                        PRTA0250
      EQUIVALENCE (DC(1),D(1401)),(TOC(1),T(1341)),(TSC(1),T(1541)),     PRTA0260
     1(TSS(1),T(1981)),(THT(1),CD(1101)),(TSCC(1),CD(1501)),             PRTA0261
     2(TC(1),T(960)),(TO(1),T(920)),(YSTRC(1),TSEC(166)),                ACPA0262
     3(TOGH(1),D(801)),(DGH(1),D(1021)),(DPNZ,T(201)),(DNNZ,T(21)),      PRTA0263
     4(TR(1),T(1300)),(R(1),XMISC(85)),                                  ACPA0264
     5(TDHV(1),CD(1968)),(TDHM(1),CD(1979)),(TDHT(1),CD(1990)),          PRTA0265
     6(ULTPV(1),TSEC(12)),(ULTPM(1),TSEC(1)),(ULTPT(1),TSEC(144)),       PRTA0266
     7(ULTNV(1),TSEC(111)),(ULTNM(1),TSEC(122)),(ULTNT(1),TSEC(155)),    PRTA0267
     8(YBUI(1),TSEC(133)),(YBLI(1),TSEC(188)),(TBWP1(1),T(745)),         PRTA0268
     9(YBUD(1),T(679)),(YBLD(1),T(690)),(GJROD(1),T(668))                PRTA0269
     A,(HHVID,T(57))                                                     ACPA0270
C                                                                        PRTA0270
      EQUIVALENCE (NCASE,ND(60)),(NCOM,ND(56)),(IGH,ND(61)),             PRTA0280
     8(ACCVID,D(431)),                                                   ACPA0288
     9(NPAGE,ND(85))                                                     PRTA0289
C                                                                        PRTA0290
      EQUIVALENCE (VFID,D(251)),(DINID,D(271)) (TEIGJ(1),TH(783)),       ACPA0300
     1(DDUC(1),CD(1)),(DDLC(1),CD(221)),(DDIS(1),CD(441)),               ACPA0301
     2(DDFS(1),CD(661)),(DDRS(1),CD(881)),                               ACPA0302
     3(GJSTD(1),CD(1)),(EISTD(1),CD(12)),(GSTD(1),CD(23)),               ACPA0303
     4(ESTD(1),CD(34)),(GJCD(1),CD(45)),(EICD(1),CD(56)),                ACPA0304
     5(GCMD(1),CD(67)),(ECMD(1),CD(78)),                                 ACPA0305
     6(GJVFS(1),CD(353)),(EIVFS(1),CD(364)) (GVFS(1),CD(375)),           ACPA0306
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```
     7(CVFS(1),CD(106)),(GNFD(1),CD(6)),(EIVFD(1),CD(10)),          ACPA0307
     8(GVFD(1),CD(11)),(EVFD(1),CD(122)),                            ACPA0308
     9(GJFD(1),CD(133)),(EIFD(1),CD(144)),(GFD(1),CD(155))           ACPA0309
     A,(ESFD(1),CD(166)),(GJCFD(1),CD(177)),(EICFD(1),CD(183))       ACPA0310
     B,(GCFD(1),CD(193)),(ECFD(1),CD(210))                           ACPA0311
     C,(GJSFL(1),CD(221)),(EISFL(1),CD(232)),(GSFL(1),CD(243))       ACPA0312
     D,(ESFL(1),CD(254)),(GJCFL(1),CD(265)),(EICFL(1),CD(276))       ACPA0313
     E,(GCFL(1),CD(287)),(ECFL(1),CD(293))                           ACPA0314
     F,(DGSTR(1),CT(132)),(ACID,D(430))                              ACPA0315
     G,(EN(1),D(1164))                                               ACPA0316
C                                                                    ACPA0320
C                                                                    ACPA0400
C             ***DESIGN SUMMARY PRINT--TYPE A***                     ACPA0410
C              *PAGE 1   BLOCK 1=NX, THICKNESSES,                    ACPA0420
C              *     BLOCK 2=LAMINATES,  BLOCK 3=STRESSES*           ACPA0430
C                                                                    ACPA0440
C             **PRINT TITLE AND CASE HEADINGS***                     ACPA0450
  300 NPAGE = IPAGE + ND(1)                                          ACPA0460
      WRITE (6,310)NCASE,(R(I),I=1,8),NPAGE,(R(I+8),I=1,8),NDOH,IGH,DGH(ACPA0470
     1IGH),DPNZ,DNNZ                                                 ACPA0480
C                                                                    ACPA0490
C                                                                    ACPA0500
  310 FORMAT (6H1 CASE,I4,1X,8A10,14H *ACPRTA* PAGE,I4,/15X,8A10,/24X,6HACPA0510
     1 NDOH=,I1,6H  IGH=I1,6H  DGH=F9.1,6H  NZ=+F6.3,2H/-F5.3,/70H      ACPA0520
     2             -**-DESIGN SUMMARY DATA--NX=KIPS/IN, STRESS=KSI-**- /6ACPA0530
     34H          **SECTION LOAD AND THICKNESS DATA--STRENGTH DESIGN**ACPA0540
     4)                                                              ACPA0541
C                                                                    ACPA0550
  311  FORMAT (34H          **LAMINATE PLY DATA** )                  ACPA0560
  3111 FORMAT (42H          **LAMINATE PLY AND CORE DATA**)          ACPA0565
  312  FORMAT (65H          **APPLIED STRESS LEVELS AND CRITICAL LOAD CACPA0570
     1ONDITION ID**)                                                 ACPA0580
C                                                                    ACPA0590
  313  FORMAT (108H SECT  NX/UC  NX/LC NXY/UL NXC/S Q/IS  Q/FS  Q/RS TSK/ACPA0600
     1U TSK/L   T-U   T-L  TC/U TH/IS  B/SP N/SP TH/FS TH/RS)        ACPA0601
  3130 FORMAT (108H SECT  NX/UC  NX/LC NXY/UL NXC/S Q/IS  Q/FS  Q/RS TSK/ACPA0610
     1U TSK/L   T-U   T-L T/RIB L/RIB B/STR  NOS TH/FS TH/RS)        ACPA0611
  3131 FORMAT (102H SECT  NX/UC  NX/LC NXY/UL NXC/S Q/IS  Q/FS  Q/RS TSK/ACPA0615
     1U TSK/L   T-U   T-L  TCORE RHO/C TH/FS TH/RS  )                ACPA0616
C                                                                    ACPA0619
  314  FORMAT (3X,I2,3F7.2,F6.2,F5.2,2F6.2,6F6.3,F6.2,F5.1,2F6.3)    ACPA0620
  3140 FORMAT (3X,I2,3F7.2,F6.2,F5.2,2F6.2,5F6.3,2F6.2,F5.1,2F6.3)   ACPA0621
  3141 FORMAT (3X,I2,3F7.2,F6.2,F5.2,2F6.2,4F6.3,F7.4,F6.2,2F6.3)    ACPA0622
C                                                                    ACPA0629
C                                                                    ACPA0630
  315  FORMAT (100H SECT L/UC M/UC N/UC +M/U L/LC M/LC N/LC +M/L L/IS M/IACPA0640
     1S N/IS L/FS M/FS N/FS +M/F L/RS M/RS  /RS +M/R)                ACPA0641
  3150 FORMAT (110H SECT L/UC M/UC N/UC L/SU +M/U L/LC M/LC N/LC L/SL +M/ACPA0650
     1L L/IR M/IR N/IR L/FS M/FS N/FS +M/F L/RS M/RS N/RS +M/R)      ACPA0651
  3151 FORMAT (104H SECT L/UC M/UC N/UC +M/U L/LC M/LC N/LC +M/L   S/C    ACPA0655
     1T/F DEN/F L/FS M/FS N/FS +M/F L/RS M/RS N/RS +M/R )            ACPA0656
C                                                                    ACPA0659
  316  FORMAT (3X,I2,19F5.1)                                         ACPA0660
  3160 FORMAT (3X,I2,21F5.1)                                         ACPA0661
  3161 FORMAT (3X,I2,8F5.1,F6.1,F6.1,F6.3,8F5.1)                     ACPA0662
C                                                                    ACPA0670
  317  FORMAT (104H SECT  FC/UC  FS/UC CLCU CLSU     FT/LC  FS/LC CLCL CLACPA0680
     1SL      FS/IS CLSIS      FS/FS CLSFS      FS/RS CLSRS)         ACPA0681
  3170 FORMAT (110H SECT  FCSKU  FSSKU  FCSTU CLCU CLSU   FTSKL  FSSKL  FACPA0690
     1TSKL CLCL CLSL   FS/IS CLSIS   FS/FS CLSFS   FS/RS CLSRS)      ACPA0691
C                                                                    ACPA0699
  318  FORMAT (3X,I2,2F7.2,2F5.1,3X,2F7.2,2F5.1,3X,F7.2,F6.1,3X,F7.2,F6.1ACPA0700
     1,3X,F7.2,F6.1)                                                 ACPA0701
  3180 FORMAT (3X,I2,3F7.2,2F5.1,1X,3F7.2,2F5.1,1X,F7.2,F6.1,1X,F7.2,F6.1ACPA0710
     1,1X,F7.2,F6.1)                                                 ACPA0711
C                                                                    ACPA0719
  319  FORMAT (12X,46H*--        -**-UPPER COVER DATA-**-        --*,2X,4ACPA0720
     16H*--        -**-LOWER COVER DATA-**-        --*)              ACPA0721
  3190 FORMAT (108H SECT   LR/S   ASTR  BSTR  TSTR HSTR   F    YBAR  I(O)ACPA0722
     1 LU/L    ASTR  BSTR  TSTR HSTR   F    YBAR  I(O) LL/L )        ACPA0723
  3191 FORMAT (3X,I2,1X,F6.1,1X,F6.3,F6.2,F6.3,F5.2,3F6.3,F5.2,2X,F6.3,F6ACPA0724
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CARD NO **** CONTENTS ****

```
     1 2 F6.3,F5.2,3F6.3,F5.2)                                         ACPA0725
C                                                                      ACPA0729
C             **BLOCK 1 DATA--LOADS*KIPS/INCH**                        ACPA0730
  320 DO 321 I=1,11                                                    ACPA0740
      TSS(I) = DDUC(I+22)/1000.0                                       ACPA0750
      TSS(I+11) = DDLC(I+22)/1000.0                                    ACPA0760
      TSS(I+22) = DDUC(I+33)/1000.0                                    ACPA0770
      TSS(I+33) = DDIS(I+22)/1000.0                                    ACPA0780
      TSS(I+44) = DDIS(I+33)/1000.0                                    ACPA0785
      TSS(I+55) = DDFS(I+33)/1000.0                                    ACPA0790
      TSS(I+66) = DDRS(I+33)/1000.0                                    ACPA0800
  321 CONTINUE                                                         ACPA0810
C                                                                      ACPA0818
C             ***TEST CONST--M/RIB, M/SPAR, FDM***                     ACPA0819
      IF (2.0 - ACID) 3210,3210,340                                    ACPA0820
 3210 IF (ACCVID - 2.0) 3211,3211,330                                  ACPA0825
C                                                                      ACPA0828
C             ***M/SPAR PLATES AND HC/PNL***                           ACPA0829
 3211 WRITE (6,313)                                                    ACPA0830
      DO 322 I=1,11                                                    ACPA0840
      WRITE (6,314)I,TSS(I),TSS(I+11),TSS(I+22),TSS(I+33),TSS(I+44),TSS(ACPA0850
     1I+55),TSS(I+66),DDUC(I+121),DDLC(I+121),DDUC(I+132),DDLC(I+132),DDACPA0860
     2UC(I+110),DDIS(I+121),DDIS(I+154),DDIS(I+165),DDFS(I+121),DDRS(I+1ACPA0870
     321)                                                              ACPA0871
  322 CONTINUE                                                         ACPA0880
C                                                                      ACPA0890
C             **BLOCK 2--LAMINATES**                                   ACPA0900
      WRITE (6,311)                                                    ACPA0910
      WRITE (6,315)                                                    ACPA0920
      DO 323 I=1,11                                                    ACPA0930
      WRITE (6,316)I,DDUC(I+66),DDUC(I+77),DDUC(I+88),DDUC(I+99),DDLC(I+ACPA0940
     166),DDLC(I+77),DDLC(I+88),DDLC(I+99),DDIS(I+66),DDIS(I+77),DDIS(I+ACPA0950
     288),DDFS(I+66),DDFS(I+77),DDFS(I+88),DDFS(I+99),DDRS(I+66),DDRS(I+ACPA0960
     377),DDRS(I+88),DDRS(I+99)                                        ACPA0961
  323 CONTINUE                                                         ACPA0970
C                                                                      ACPA0980
C             **BLOCK 3--STRESSES AND LOAD CONDITION ID**              ACPA0990
 3239 WRITE (6,312)                                                    ACPA1000
      DO 324 I=1,11                                                    ACPA1010
      TSS(I) = DDUC(I+44)/1000.0                                       ACPA1020
      TSS(I+11) = DDUC(I+55)/1000.0                                    ACPA1030
      TSS(I+22) = DDLC(I+44)/1000.0                                    ACPA1040
      TSS(I+33) = DDLC(I+55)/1000.0                                    ACPA1050
      TSS(I+44) = DDIS(I+55)/1000.0                                    ACPA1060
      TSS(I+55) = DDFS(I+55)/1000.0                                    ACPA1070
      TSS(I+66) = DDRS(I+55)/1000.0                                    ACPA1080
  324 CONTINUE                                                         ACPA1090
C                                                                      ACPA1100
C                                                                      ACPA1110
      WRITE (6,317)                                                    ACPA1120
      DO 325 I=1,11                                                    ACPA1130
      WRITE (6,318)I,TSS(I),TSS(I+11),DDUC(I),DDUC(I+11),TSS(I+22),TSS(IACPA1140
     1+33),DDLC(I),DDLC(I+11),TSS(I+44),DDIS(I+11),TSS(I+55),DDFS(I+11),ACPA1150
     2TSS(I+66),DDRS(I+11)                                             ACPA1160
  325 CONTINUE                                                         ACPA1170
      GO TO 600                                                        ACPA1180
C                                                                      ACPA1190
C             ***FDM***                                                ACPA1200
  330 WRITE (6,313)                                                    ACPA1210
      DO 331 I=1,11                                                    ACPA1220
      WRITE (6,314)I,TSS(I),TSS(I+11),TSS(I+22),TSS(I+33),TSS(I+44),TSSACPA1230
     1(I+55),TSS(I+66),DDUC(I+121),DDLC(I+121),DDUC(I+132),DDLC(I+132),DACPA1240
     2DIS(I+154),DDIS(I+165),DDFS(I+121),DDRS(I+121)                   ACPA1250
  331 CONTINUE                                                         ACPA1260
C                                                                      ACPA1270
C             ***LAMINATE/CORE DATA***                                 ACPA1280
      WRITE (6,315)                                                    ACPA1290
      TSS(99) = ENM(5)/10.0                                            ACPA1300
      DO 332 I=1,11                                                    ACPA1310
      TSS(100) = DDIS(I+154)/1000.0                                    ACPA1320
      WRITE (6,316)I,DDUC(I+66),DDUC(I+77),DDUC(I+88),DDUC(I+99),DDLC(IACPA1330
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CARD NO **** CONTENTS ****

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     1+66),DOLC(I+77),DOLC(I+88),DOLC(I+99),TSS(9),TSS(10),DOIS(I+165)ACPA1340
     2,DOFS(I+66),DOFS(I+77),DOFS(I+88),DOFS(I+99),DORS(I+66),DORS(I+77 ACPA1350
     3,DORS(I+88),DORS(I+99))                                          ACPA1360
  332 CONTINUE                                                         ACPA1370
      GO TO 3239                                                       ACPA1380
C                                                                      ACPA1390
C             ***H/R10 CONST***                                        ACPA1400
  340 WRITE (6,3130)                                                   ACPA1410
      DO 341 I=1,11                                                    ACPA1420
      WRITE (6,3140)I,TSS(I),TSS(I+11),TSS(I+22),TSS(I+33),TSS(I+44),TSSACPA1430
     1(I+55),TSS(I+66),DOUC(I+121),DOLC(I+121),DOUC(I+132),DOLC(I+132),DACPA1440
     2OIS(I+121),DOIS(I+154),DOSTR(I),DOIS(I+165),DOFS(I+121),DORS(I+12)ACPA1450
     3)                                                                ACPA1455
  341 CONTINUE                                                         ACPA1460
C                                                                      ACPA1470
C              **BLOCK 2   LAMINATE DATA**                             ACPA1480
      WRITE (5,311)                                                    ACPA1490
      WRITE (6,3150)                                                   ACPA1500
      DO 342 I=1,11                                                    ACPA1510
      WRITE (6,3160)I,DOUC(I+66),DOUC(I+77),DOUC(I+88),DOSTR(I+55),DOUC(ACPA1520
     1I+99),DOLC(I+65),DOLC(I+77),DOLC(I+88),DOSTR(I+165),DOLC(I+99),DOIACPA1530
     2S(I+66),DOIS(I+77),DOIS(I+89),DOFS(I+65),DOFS(I+77),DOFS(I+88),DOFACPA1540
     3S(I+99),DORS(I+66),DORS(I+77),DORS(I+88),DORS(I+99)              ACPA1550
  342 CONTINUE                                                         ACPA1560
C                                                                      ACPA1570
C             ***STRINGER DATA***                                      ACPA1580
      WRITE (6,319)                                                    ACPA1590
      WRITE (6,3190)                                                   ACPA1600
      DO 343 I=1,11                                                    ACPA1610
      WRITE (6,3191)I,DOIS(I+154),DOSTR(I+11),DOSTR(I),DOSTR(I+22),DOSTRACPA1620
     1(I+33),DOSTR(I+44),DOSTR(I+66),DOSTR(I+77),DOSTR(I+264),DOSTR(I+12ACPA1630
     21),DOSTR(I    ),DOSTR(I+132),DOSTR(I+143),DOSTR(I+154),DOSTR(I+176)ACPA1640
     3,DOSTR(I+187),DOSTR(I+319)                                       ACPA1650
  343 CONTINUE                                                         ACPA1660
C                                                                      ACPA1670
C              **TITLE FOR PAGE 2.  BLOCK 1, STRESSES AND LOAD CONDITIONACPA1680
      NPAGE = NPAGE + NO(1)                                            ACP 1690
      WRITE (6,310)NCASE,(R(I),I=1,8),NPAGE,(R(I+8),I=1,8),NODW,IGW,DGWACPA1700
     1(GW),DPNZ,DWNZ                                                   ACPA1710
C                                                                      ACPA1720
      WRITE (6,312)                                                    ACPA1730
      WRITE (6,3170)                                                   ACPA1740
      DO 344 I=1,11                                                    ACPA1750
      TSS(1) = DOUC(I+44)/1000.0                                       ACPA1760
      TSS(2) = DOUC(I+55)/1000.0                                       ACPA1770
      TSS(3) = DOUC(I+165)/1000.0                                      ACPA1780
      TSS(4) = DOUC(I)                                                 ACPA1790
      TSS(5) = DOUC(I+11)                                              ACPA1800
      TSS(6) = DOLC(I+44)/1000.0                                       ACPA1810
      TSS(7) = DOLC(I+55)/1000.0                                       ACPA1820
      TSS(8) = DOLC(I+165)/1000.0                                      ACPA1830
      TSS(9) = DOLC(I)                                                 ACPA1840
      TSS(10) = DOLC(I+11)                                             ACPA1850
      TSS(11) = DOIS(I+55)/1000.0                                      ACPA1860
      TSS(12) = DOIS(I+11)                                             ACPA1870
      TSS(13) = DOFS(I+55)/1000.0                                      ACPA1880
      TSS(14) = DOFS(I+11)                                             ACPA1890
      TSS(15) = DORS(I+55)/1000.0                                      ACPA1900
      TSS(16) = DORS(I+11)                                             ACPA1910
      WRITE (6,3180)I,(TSS(K),K=1,16)                                  ACPA1920
  344 CONTINUE                                                         ACPA1930
      GO TO 600                                                        ACPA1940
C                                                                      ACPA1950
C                                                                      ACPA6020
C              **PROCESS TVF/TST DATA BEFORE MOVE**                    ACPA6030
  600 DO 6000 I=1,11                                                   ACPA6040
      TSS(I) = (DOUC(I+121) + DOUC(I+143))/DOUC(I+121)                 ACPA6050
      TSS(I+11) = (DOLC(I+121) + DOLC(I+143))/DOLC(I+121)              ACPA6060
      TSS(I+22) = (DOFS(I+121) + DOFS(I+143))/DOFS(I+121)              ACPA6070
      TSS(I+33) = (DORS(I+121) + DORS(I+143))/DORS(I+121)              ACPA6080
 6000 CONTINUE                                                         ACPA6090
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CARD NO   ****                      CONTENTS                          ****
      C                                                              ACPA6090
      C             ***TEST FOR NEW PAGE  IN SPAR AND FCHI***        ACPA6094
            IF (D(1) - ACID) 601,6010,6010                          ACPA6100
      C                                                              ACPA6105
      C             ***PAGE 2 HEADINGS***                            ACPA6109
  601 NPAGE = NPAGE + ND(1)                                          ACPA6110
      WRITE (6,612)NCASE,(R(I),I=1,8),NPAGE,(R(I+8),I=1,8),NODH,IGH,DGHACPA6120
     1(GH),EPNZ,DNZ                                                  ACPA6130
      C                                                              ACPA6139
      C              **SETUP CD(1-400) FROM RCD NO**                 ACPA6140
 6010 CALL READMS (1,CD(1),400,40)                                   ACPA6150
      C                                                              ACPA6160
      C                                                              ACPA6170
      WRITE (6,602)TE(GJ(1)                                          ACPA6180
  602 FORMAT (40H0          -**-BASIC STIFFNESS SUMMARY AT,F7.1,12H DEGREACPA6190
     1ES-**-)                                                        ACPA6200
  603 FORMAT (51H0          -**-FLUTTER ANALYSIS STIFFNESS SUMMARY AT,F7.ACPA6210
     11,12H DEGREES-**-)                                             ACPA6220
  604 FORMAT (68H0          -**-STIFFNESS SUMMARY FOR FLUTTER OPTIMIZATIOACPA6230
     1N ANALYSIS AT,F7.1,12H DEGREES-**-)                            ACPA6240
  605 FORMAT (62H0          -**-STIFFNESS SUMMARY FOR FLEXIBLE LOADS ANALACPA6250
     1YSIS AT,F7.1,12H DEGREES-**-)                                  ACPA6260
      C                                                              ACPA6270
  606 FORMAT (108H  SECT   GJ-ST   EI-ST   G-ST    E-ST GJ/EI    GJ-CMP ACPA6280
     1 EI-CMP  G-CMP   E-CMP GJ/EI   RTSKU RTSKL RTWFS RTWRS)        ACPA6290
  607 FORMAT (4X,I2,2F8.3,F7.3,F8.3,F6.3,2X,2F8.3,F7.3,F8.3,F6.3,2X,4F6 ACPA6300
     1.3)                                                            ACPA6310
      C                                                              ACPA6320
  608 FORMAT (104H  SECT   GJ-VF     GJ-ST   EI-ST   G-ST    E-ST GJ/EI ACPA6330
     1 RGJS    GJ-CMP  EI-CMP  G-CMP   E-CMP GJ/EI RGJC )            ACPA6340
  609 FORMAT (4X,I2,F8.3,2X,2F8.3,F7.3,F8.3,2F6.3,2X,2F8.3,F7.3,F8.3,2F6ACPA6350
     1.3)                                                            ACPA6360
      C                                                              ACPA6370
  610 FORMAT (82H  SECT   GJ-ST   EI-ST   G-ST    E-ST GJ/EI    GJ-CMP  ACPA6380
     1EI-CMP  G-CMP   E-CMP GJ/EI)                                   ACPA6390
  611 FORMAT (4X,I2,2F8.3,F7.3,F8.3,F6.3,2X,2F8.3,F7.3,F8.3,F6.3)      ACPA6400
      C                                                              ACPA6409
  612 FORMAT (6H1 CASE,I4,1X,8A10,14H *ACPRTA* PAGE,I4,/14X,8A10,/24X,6HACPA6410
     1 NODH=,I1,6H  IGH=I1,6H  DGH=F9.1,6H  NZ=+F6.3,2H/-F5.3,//86H     ACPA6411
     2                -**-TORQUE BOX STIFFNESS SUMMARIES--(GJ,EI*(10)-9),(GACPA6412
     3,E*(10)-6)-**- )                                               ACPA6413
      C                                                              ACPA6419
      C               *GJ,EIX10-9,(G,E)X10-6**                       ACPA6420
  620 DO 621 I=1,11                                                  ACPA6430
      GJSTD(I) = GJSTD(I)/1000000000.0                               ACPA6440
      EISTD(I) = EISTD(I)/1000000000.0                               ACPA6450
      GSTD(I) = GSTD(I)/1000000.0                                    ACPA6460
      ESTD(I) = ESTD(I)/1000000.0                                    ACPA6470
      TSS(I+44) = GJCD(I)/1000000000.0                               ACPA6480
      TSS(I+55) = EICD(I)/1000000000.0                               ACPA6490
      TSS(I+66) = GCMD(I)/1000000.0                                  ACPA6500
      TSS(I+77) = ECMD(I)/1000000.0                                  ACPA6510
      TR(I) = GJSTD(I)/EISTD(I)                                      ACPA6520
      TR(I+11) = TSS(I+44)/TSS(I+55)                                 ACPA6530
  621 CONTINUE                                                       ACPA6540
      C                                                              ACPA6550
      C              **PRINT BLOCK 1**                               ACPA6560
      WRITE (6,606)                                                  ACPA6570
      DO 622 I=1,11                                                  ACPA6580
      WRITE (6,607)I,GJSTD(I),EISTD(I),GSTD(I),ESTD(I),TR(I),TSS(I+44),TACPA6590
     1SS(I+55),TSS(I+66),TSS(I+77),TR(I+11),TSS(I),TSS(I+11),TSS(I+22),TACPA6700
     2SS(I+33)                                                       ACPA6710
  622 CONTINUE                                                       ACPA6720
      C                                                              ACPA6730
      C            ***BLOCK 2--FLUTTER STIFFNESS.  CHECK FOR PRINT***  ACPA6740
      IF (VFID) 624,623,624                                          ACPA6750
  623 WRITE (6,6230)                                                 ACPA6760
 6230 FORMAT (52H0          -***-NO FLUTTER STIFFNESS PENALTIES-***- )  ACPA6765
      GO TO 630                                                      ACPA6770
      C                                                              ACPA6780
      C            ***PROCESS FLUTTER ANALYSIS DATA FOR PRINT***     ACPA6790
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 ****                          CONTENTS                        ****
  624 DO 625 I=1,11                                            ACPA6800
      GJVFS(I) = GJVFS(I)/1000000000.0                         ACPA6810
      EIVFS(I) = EIVFS(I)/1000000000.0                         ACPA6820
      GVFS(I) = GVFS(I)/1000000.0                              ACPA6830
      EVFS(I) = EVFS(I)/1000000.0                              ACPA6840
      TSS(I+44) = GJVFD(I)/1000000000.0                        ACPA6850
      TSS(I+55) = EIVFD(I)/1000000000.0                        ACPA6860
      TSS(I+66) = GVFD(I)/1000000.0                            ACPA6870
      TSS(I+77) = EVFD(I)/1000000.0                            ACPA6880
      TSS(I+88) = GJROD(I)/1000000000.0                        ACPA6890
      TR(I) = GJVFS(I)/EIVFS(I)                                ACPA6900
      TR(I+11) = TSS(I+44)/TSS(I+55)                           ACPA6910
      TSS(I) = TSS(I+88)/GJVFS(I)                              ACPA6920
      TSS(I+11) = TSS(I+88)/TSS(I+44)                          ACPA6930
  625 CONTINUE                                                 ACPA6940
C                                                              ACPA6950
C                                                              ACPA6960
      WRITE (6,603)TEIGJ(2)                                    ACPA6970
      WRITE (6,608)                                            ACPA6980
      DO 626 I=1,11                                            ACPA6990
      WRITE (6,609)I,TSS(I+88),GJVFS(I),EIVFS(I),GVFS(I),GVFS(I),TR(I),TACPA7000
     1SS(I),TSS(I+44),TSS(I+55),TSS(I+66),TSS(I+77),TR(I+11),TSS(I+11)  ACPA7010
  626 CONTINUE                                                 ACPA7020
C                                                              ACPA7030
C         ***PAGE 3--FLUTTER OPT/FLEX LOADS STIFFNESS SUMMARIES***  ACPA7040
C         **TEST FOR PRINT**                                   ACPA7050
  630 IF (DINID) 240,240,631                                   ACPA7060
  631 NPAGE = NPAGE + ND(1)                                    ACPA7070
      WRITE (6,612)NCASE,(R(I),I=1,8),NPAGE,(R(I+8),I=1,8),NOOH,IGM,DGM(ACPA7080
     1IGM),DPNZ,DNNZ                                           ACPA7090
C                                                              ACPA7100
C          **TEST FOR FLUTTER OPT OUTPUT--ID=1 OR 3**          ACPA7110
      IF (DINID - D(2)) 632,635,632                            ACPA7120
  632 WRITE (6,604)TEIGJ(3)                                    ACPA7130
C                                                              ACPA7140
C          **PROCESS DATA FOR PRINT**                          ACPA7150
      DO 633 I=1,11                                            ACPA7160
      TSS(I) = GJSFO(I)/1000000000.0                           ACPA7170
      TSS(I+11) = EISFO(I)/1000000000.0                        ACPA7180
      TSS(I+22) = GSFO(I)/1000000.0                            ACPA7190
      TSS(I+33) = ESFO(I)/1000000.0                            ACPA7200
      TSS(I+44) = GJCFO(I)/1000000000.0                        ACPA7210
      TSS(I+55) = EICFO(I)/1000000000.0                        ACPA7220
      TSS(I+66) = GCFO(I)/1000000.0                            ACPA7230
      TSS(I+77) = ECFO(I)/1000000.0                            ACPA7240
      TR(I) = TSS(I)/TSS(I+11)                                 ACPA7250
      TR(I+11) = TSS(I+44)/TSS(I+55)                           ACPA7260
  633 CONTINUE                                                 ACPA7270
C                                                              ACPA7280
      WRITE (6,610)                                            ACPA7290
      DO 634 I=1,11                                            ACPA7300
      WRITE (6,611)I,TSS(I),TSS(I+11),TSS(I+22),TSS(I+33),TR(I),TSS(I+44ACPA7310
     1),TSS(I+55),TSS(I+66),TSS(I+77),TR(I+11)                 ACPA7320
  634 CONTINUE                                                 ACPA7330
C                                                              ACPA7340
C         ***TEST FOR FLEX LOADS OUTPUT--ID=1 OR 2***          ACPA7350
  635 IF (DINID - D(2)) 636,636,240                            ACPA7360
  636 WRITE (6,605)TEIGJ(4)                                    ACPA7370
C                                                              ACPA7380
C          **PROCESS DATA FOR PRINT**                          ACPA7390
      DO 637 I=1,11                                            ACPA7400
      TSS(I) = GJSFL(I)/1000000000.0                           ACPA7410
      TSS(I+11) = EISFL(I)/1000000000.0                        ACPA7420
      TSS(I+22) = GSFL(I)/1000000.0                            ACPA7430
      TSS(I+33) = ESFL(I)/1000000.0                            ACPA7440
      TSS(I+44) = GJCFL(I)/1000000000.0                        ACPA7450
      TSS(I+55) = EICFL(I)/1000000000.0                        ACPA7460
      TSS(I+66) = GCFL(I)/1000000.0                            ACPA7470
      TSS(I+77) = ECFL(I)/1000000.0                            ACPA7480
      TR(I) = TSS(I)/TSS(I+11)                                 ACPA7490
      TR(I+11) = TSS(I+44)/TSS(I+55)                           ACPA7500
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CARD NO **** CONTENTS ****

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 637 CONTINUE                                                      ACPA7510
C                                                                  ACPA7520
     WRITE (6,610)                                                 ACPA7530
     DO 638 I=1,11                                                 ACPA7540
     WRITE (6,611)I,TSS(I),TSS(I+11),TSS(I+22),TSS(I+33),TR(I),TSS(I+44ACPA7550
    1),TSS(I+55),TSS(I+66),TSS(I+77),TR(I+11)                      ACPA7560
 638 CONTINUE                                                      ACPA7570
C                                                                  ACPA7580
C                                                                  PRTAI470
C                                                                  PRTAI480
C      PRINT PAGE 4/5--WT AND WT/IN SUMMARY.                       PRTAI490
 240 NPAGE = NPAGE + IO(1)                                         PRTAI500
     WRITE (6,2400)ICASE,(R(I),I=1,8),NPAGE,NOOH,IGH,DGH(IGH),DFNZ,DNNZPRTAI505
2400 FORMAT (6H1 CASE,I4,1X,8A10,14H *ACPRTA* PAGE,I4,/24X,6H NOOH=I1,6PRTAI506
    1H  IGH=I1,6H  DGH=F9.1,6H  NZ=+F6.3,2H/-F5.3)                 PRTAI507
C                                                                  PRTAI509
     WRITE (6,241)                                                 PRTAI510
C                                                                  PRTAI519
 241 FORMAT (52H              -**-PANEL WEIGHT SUMMARY.  LBS/SIDE-**-/10PRTAI520
    14H  PANEL       SUM       T-BOX      L.E.      T.E.     MISC.  DELPRTAI530
    2TA VF       TIP         RT-RIB    C-SECT)                     PRTAI540
C                                                                  PRTAI549
     IF (NOOH - D(1)) 2410,2410,242                                PRTAI550
2410 TSS(78) = WWVID/D(2)                                          PRTAI551
     TSS(79) = TWT(50)*TSS(78)                                     PRTAI552
     TSS(80) = TWT(54)*TSS(78)                                     PRTAI553
     DO 2411 I=1,5                                                 PRTAI554
     TSS(I+80) = TWT(I+54)*TSS(78)                                 PRTAI555
2411 CONTINUE                                                      PRTAI556
C                                                                  PRTAI560
C               **PRINT 10 PNL WTS PLUS INBD AND OBD**             PRTAI570
C                *WT DATA IN TC(1-340)*                            PRTAI575
 242 WRITE (6,243)(TC(I+133),I=1,6),TSS(79),TC(140),TC(141),(TSS(I+80),PRTAI580
    1I=1,5),DC(3),TSS(80)                                          PRTAI581
C                                                                  PRTAI599
 243 FORMAT (7H  TOTAL,F12.2,F11.2,2F10.2,F9.2,F10.2,F11.2,4X,2F10.2,/7PRTAI590
    1H    INBD,F12.2,F11.2,2F10.2,F9.2,F10.2,15X,F10.2)            PRTAI591
 244 FORMAT (4X,I2,1X,F12.2,F11.2,2F10.2,F9.2,F10.2)               PRTAI600
 245 FORMAT (7H     OBD,F12.2,F11.2,2F10.2,F9.2,F10.2,F11.2)       PRTAI610
C                                                                  PRTAI620
C                 *PNLS 1-10.  DATA IN TC(142-201) 6/BLOCK, RT-TIP*   PRTAI630
     DO 246 N=1,10                                                 PRTAI640
     L = N*ND(6)                                                   PRTAI650
     K = L - ND(5)                                                 PRTAI660
     WRITE (6,244)N,(TC(I+141),I=K,L,1)                            PRTAI670
 246 CONTINUE                                                      PRTAI680
C                                                                  PRTAI690
C                *OBD PNL*                                         PRTAI700
     WRITE (6,245)(TWT,I+144),I=1,5),DC(3),TWT(50)                 PRTAI710
C                                                                  PRTAI720
C                                                                  PRTAI730
C                **WT/IN DATA**                                    PRTAI740
 250 WRITE (6,251)                                                 PRTAI750
 251 FORMAT (40H             -**-WEIGHT/INCH SUMMARY-**-/84H  SECT.   PRTAI760
    1  TOTAL       T-BOX      L.E.       T.E.     MISC.  DELTA VF  CONC. PRTAI770
    2ITEMS  )                                                      PRTAI780
C                                                                  PRTAI790
 252 FORMAT (4X,I2,1X,F12.4,F11.4,F10.4,2F9.4,F10.4,F11.4)         PRTAI800
C                                                                  PRTAI810
C               **DATA IN TC(220-340) 11 SETS OF 11 ITEMS, RT-TIP**   PRTAI820
C                *PRINT FIRST 7 ITEMS OF EACH SET*                 PRTAI830
     DO 253 N=1,11                                                 PRTAI840
     K = N*ND(11) - ND(10)                                         PRTAI850
     L = K + ND(6)                                                 PRTAI860
     WRITE (6,252)N,(TC(I+219),I=K,L,1)                            PRTAI870
 253 CONTINUE                                                      PRTAI880
C                                                                  PRTAI890
C                                                                  PRTAI900
C              ***DESIGN LOADS SUMMARY***                          PRTAI910
C                *ULT POSITIVE AND NEGATIVE LOADS AND 1-G TOTAL DH*   PRTAI920
     WRITE (6,261)                                                 PRTAI930
```

CARD NO **** CONTENTS ****

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  261 FORMAT (62H              ***DESIGN LOADS SUMMARY***  /113H SECT  PRTA1940
     1  +V(ULT)     +M(ULT)     +T(ULT)      -V(ULT)      M(ULT)     -T(ULPRTA1950
     211   V(1-G)   M(1-G)   T(1-G) )                                  PRTA1960
C                                                                      PRTA1970
  262 FORMAT (4X,I2,F11.1      1,F12.1,F11.1,2F12.1,F10.1,2F11.1)      PRTA1980
C                                                                      PRTA1990
C              *ULT LOADS STORED TIP-ROOT, 1-G DW LOADS STORED RT-TIP* PRTA2000
      DO 263 N=1,11                                                    PRTA2010
      K = ND(12) - N                                                   PRTA2020
      WRITE (6,262)N,ULTPV(K),ULTPM(K),ULTPT(K),ULTNV(K),ULTNM(K),ULTNT(PRTA2030
     1K),TDWV(N),TDWM(N),TDWT(N)                                       PRTA2040
  263 CONTINUE                                                         PRTA2050
C                                                                      PRTA2560
C                                                                      PRTA2570
C             ***PAGE 5/6--SECTION DESIGN Y-BAR DATA***                PRTA2580
  292 NPAGE = NPAGE + ND(1)                                            PRTA2590
      WRITE (6,296)NCASE,(R(I),I=1,8),NPAGE,(R(I+8),I=1,8),NOOW,IGW,DGW(PRTA2600
     11GW),DPNZ,DPNZ                                                   PRTA2601
C                                                                      PRTA2609
  296 FORMAT (6H1 CASE,I4,1X,8A10,14H *ACPRTA* PAGE,I4,/15X,8A10,//24X,EPRTA2610
     1H NOOW=I1,6H  IGW=I1,6H  DGW=F9.1,6H  NZ**F6.3,2H/-F5.3,///44H   PRTA2611
     2     ***SECTION DESIGN Y-BAR DATA*** )                           PRTA2612
C                                                                      PRTA2619
      WRITE (6,2920)                                                   PRTA2620
 2920 FORMAT (46H0  STA  YBU(D)  YBU(A)  YBL(D)  YBL(A)  TB-W/IN )     PRTA2621
 2921 FORMAT (1H 3X,I2,4F8.4,F9.4)                                     PRTA2625
C                                                                      PRTA2629
      DO 2922 I=1,11                                                   PRTA2630
      K = ND(12) - I                                                   PRTA2640
      WRITE (6,2921)I,YBUD(K),YBUI(K),YBLD(K),YBLI(K),TBWPI(I)         PRTA2650
 2922 CONTINUE                                                         PRTA2660
C                                                                      PRTA2670
C                                                                      PRTA2680
C              **TOTAL WT SUMMARY--TWT(1-59),(145-149)*                PRTA2690
      WRITE (6,293)                                                    PRTA2700
  293 FORMAT (1H0,/48H             ***ROOT SECTION WEIGHT SUMMARY ***/ PRTA2710
     16H   TWT)                                                        PRTA2720
C                                                                      PRTA2730
  294 FORMAT (3X,I2,9F11.4)                                            PRTA2740
  295 FORMAT (3X,I2,5F11.4)                                            PRTA2750
C                                                                      PRTA2780
C                *ROOT DATA*                                           PRTA2790
      DO 297 N=1,54,9                                                  PRTA2800
      K = N + ND(8)                                                    PRTA2810
      WRITE (6,294)N,(TWT(I),I=N,K,1)                                  PRTA2820
  297 CONTINUE                                                         PRTA2830
      N = 55                                                           PRTA2840
      K = 145                                                          PRTA2850
      WRITE (6,295)N,(TWT(I+54),I=1,5),K,(TWT(I+144),I=1,5)            PRTA2860
C                                                                      PRTA2870
C                                                                      PRTA2130
C            ****TEST FOR GW(2) FOR GEOMETRY PRINT****                 PRTA2140
C                **TEST FOR ZERO GW(1) AND GW(2) FOR GEOMETRY PRINT**  PRTA2141
  270 IF (ND(2) - IGW) 2701,271,2702                                   PRTA2150
 2701 IF (DGW(1)) 2702,2702,299                                        PRTA2151
 2702 IF (DGW(2)) 271,271,299                                          PRTA2152
C                                                                      PRTA2159
  271 IF (NOOW - ND(2)) 2720,299,299                                   PRTA2160
C                                                                      PRTA2169
 2720 NPAGE = NPAGE + ND(1)                                            PRTA2170
      WRITE (6,2721)NCASE,(R(I),I=1,8),NPAGE,(R(I+8),I=1,8)            PRTA2171
C                                                                      PRTA2172
 2721 FORMAT (6H1 CASE,I4,1X,8A10,14H *ACPRTA* PAGE,I4,/15X,8A10)      PRTA2173
C                                                                      PRTA2179
C                  PRINT GEOMETRY                                      PRTA2180
  272 WRITE            (6,273)TSEC(176),TSEC(55),TSEC(66),TSEC(88),TSEC(PRTA2190
     199),T(100),YBUD(11),YBLD(11)                                     PRTA2200
  273 FORMAT (40H0             ***SECTION GEOMETRY SUMMARY***   /102H  PRTA2210
     1 SECT.    YSTRC      WIDTH    DAVE      DFS      DRS     C-AERO  PRTA2220
     2 Y-BU     Y-BL                      /8H    ROOT2F10.3,3F9.3,F10.3,2FPRTA2230
     39.4)                                                             PRTA2240
```

CARD NO	**** CONTENTS ****	
6816	C *FORMAT (5X,I2,1X,2F10.3,3F9.3,F10.3,2F9.4)	PRTA2250
6817	C 2 FORMAT (10H TIP,2F10.3,3F9.3,F10.3,2F9.4,/)	PRTA2260
6818	C	PRTA2270
6819	276 DO 277 N=2,10,1	PRTA2280
6820	K=ND(12)-N	PRTA2290
6821	WRITE (6,274)N,TSEC(K+1E5),TSEC(K+99),TSEC(K+55),TSEC(K+	PRTA2300
6822	1+77),TSEC(K+88),TIN+99),YBUD(K),YBLD(K)	PRTA2310
6823	277 CONTINUE	PRTA2320
6824	C	PRTA2330
6825	C	PRTA2340
6826	278 WRITE (6,275)TSEC(166),TSEC(150),TSEC(156),TSEC(170),TSEC(PRTA2350	
6827	1E2),TC110),YBUD(1),YBLD(1)	PRTA2360
6828	C	PRTA2370
6829	C	PRTA2380
6830	C	PRTA3000
6831	C	PRTA9900
6832	C **EXIT**	PRTA9990
6833	299 RETURN	PRTA9991
6834	END	PRTA9999
6835	C********** **********	
6836	C	
6837	C *****FUNCTION XN*****	
6838	C ***EVALUATION OF NO. OF N-PLIES FOR GIVEN L AND M PLIES***	
6839	C	
6840	C**********	
6841	C	
6842	FUNCTION XN(IL,IM)	FUN0N010
6843	C	
6844	C FUNCTION TO CALCULATE NUMBER OF 90 DEGREE PLIES FOR A LAMINATE	
6845	C NUMBER OF PLIES IS ARBITRATED AT CB PER CENT	
6846	C	
6847	COMMON T(9168)	FUN0N020
6848	C	FUN0N030
6849	DIMENSION EL(15),CNT(38)	FUN0N040
6850	C	FUN0N050
6851	EQUIVALENCE (EL(1),T(1300)),(CNT(1),T(1594)),	FUN0N060
6852	1(C3,CNT(13)),(CB,CNT(23))	FUN0N069
6853	C	FU5X5070
6854	XN = INT((EL(IL) + 2.0*EL(IM))*CB + C3)	FUN0N080
6855	RETURN	FUN0N090
6856	END	FUN0N100
6857	C**********	
6858	C	
6859	C *****SUBROUTINE WTCAL*****	
6860	C ***SECTION/PANEL WEIGHT EVALUATION***	
6861	C	
6862	C**********	
6863	C	
6864	SUBROUTINE WTCAL	
6865	C	
6866	C *****SAME AS SUBROUTINE WTCAL IN OVERLAY (10,0)*****	
6867	C	
6868	C ***SUBROUTINE WTCAL CALLS RTRIB, BHDJT AND WTPIN***	
6869	CALL RTRIB	
6870	CALL BHDJT	
6871	CALL WTPIN	
6872	C	
6873	RETURN	
6874	END	
6875	C**********	
6876	C	
6877	C *****SUBROUTINE BHDJT*****	
6878	C ***BULKHEAD AND JOINT WEIGHT EVALUATION***	
6879	C	
6880	C**********	
6881	C	
6882	SUBROUTINE BHDJT	
6883	C	
6884	C *****SAME AS SUBROUTINE BHDJT IN OVERLAY (10,0)*****	
6885	C	
6886	RETURN	

CARD NO **** CONTENTS ****

```
      END
C*********************************************************************
C
C        *****SUBROUTINE RTRIB*****
C   ***ROOT RIB AND SHEAR TIE WEIGHT EVALUATION***
C
C*********************************************************************
C
      SUBROUTINE RTRIB
C
C             *****SAME AS SUBROUTINE RTRIB IN OVERLAY (10,0)*****
C
      RETURN
      END
C*********************************************************************
C
C        *****SUBROUTINE WTPIN*****
C   ***SECTION WEIGHT PER INCH EVALUATION***
C
C*********************************************************************
C
      SUBROUTINE WTPIN
C
C             *****SAME AS SUBROUTINE WTPIN IN OVERLAY (10,0)*****
C
      RETURN
      END
C        *****SUBROUTINE DWYBA*****
C   ***DEADWEIGHT AND COUPLE ARM ADJUSTMENT FOR PASS (1)***
C
C*********************************************************************
C
      SUBROUTINE DWYBA
C
C             *****SAME AS SUBROUTINE DWYBA IN OVERLAY (9,0)*****
C
C                   ***SUBROUTINE DWYBA CALLS DEADW***
      CALL DEADW
C
      RETURN
      END
C*********************************************************************
C
C        *****SUBROUTINE DEADW*****
C   ***TORQUE-BOX INERTIA LOAD EVALUATION***
C
C*********************************************************************
C
      SUBROUTINE DEADW
C
C             *****SAME AS SUBROUTINE DEADW IN OVERLAY (9,0)*****
C
      RETURN
      END
C*********************************************************************
C
C        *****SUBROUTINE CSECW*****
C   ***CENTER-SECTION WEIGHT EVALUATION***
C
C*********************************************************************
C
      SUBROUTINE CSECW
C
C             *****SAME AS SUBROUTINE CSECW IN OVERLAY (9,0)*****
C
      RETURN
      END
C*********************************************************************
C
C        *****SUBROUTINE PIVOT*****
C   ***PIVOT STRUCTURE SYNTHESIS AND WEIGHT EVALUATION***
```

CARD NO **** CONTENTS ****

```
C
C*****************************************************************
C
      SUBROUTINE PIVOT
C
C           *****SAME AS SUBROUTINE PIVOT IN OVERLAY (9,0)*****
C
C               ***SUBROUTINE PIVOT CALLS TEE AND TEL***
      CALL TEE
      CALL TEL
C
      RETURN
      END
C*****************************************************************
C
C       *****SUBROUTINE TEE*****
C   ***PIVOT DESIGN/SYNTHESIS DATA EVALUATION***
C
C*****************************************************************
C
      SUBROUTINE TEE
C
C           *****SAME AS SUBROUTINE TEE IN OVERLAY (9,0)*****
C
      RETURN
      END
C*****************************************************************
C
C       *****SUBROUTINE TEL*****
C   ***PIVOT DESIGN/SYNTHESIS DATA EVALUATION***
C
C*****************************************************************
C
      SUBROUTINE TEL
C
C           *****SAME AS SUBROUTINE TEL IN OVERLAY (9,0)*****
C
      RETURN
      END
C*****************************************************************
C
C       *****SUBROUTINE OLPVT*****
C   ***EVALUATION OF T-BOX STRUCTURE REPLACED BY PIVOT***
C
C*****************************************************************
C
      SUBROUTINE OLPVT
C
C           *****SAME AS SUBROUTINE OLPVT IN OVERLAY (9,0)*****
C
      RETURN
      END
C*****************************************************************
C
C       *****SUBROUTINE PRTB*****
C   ***DESIGN DATA PRINT - TYPE B SECTION DESIGN DETAIL SUMMARY***
C
C*****************************************************************
C
      SUBROUTINE PRTB
C
C           *****SAME AS SUBROUTINE PRTB IN OVERLAY (10,0)*****
C
      RETURN
      END
C*****************************************************************
C
C       *****SUBROUTINE PRTC*****
C   ***DESIGN DATA PRINT - TYPE C SECTION WEIGHT DETAIL SUMMARY***
C
C*****************************************************************
```

CARD NO	**** CONTENTS ****
7029	C
7030	SUBROUTINE FRTC
7031	C
7032	C *****SAME AS SUBROUTINE FRTC IN OVERLAY (10,0)*****
7033	C
7034	RETURN
7035	END
7036	C**********
7037	C
7038	C *****SUBROUTINE PRTH*****
7039	C ***DESIGN DATA PRINT - TYPE H C-SEC/PIVOT DESIGN SUMMARY***
7040	C
7041	C**********
7042	C
7043	SUBROUTINE PRTH
7044	C
7045	C *****SAME AS SUBROUTINE PRTH IN OVERLAY (9,0)*****
7046	C
7047	RETURN
7048	END